THE UNIVERSITY *of* EDINBURGH

Cultural Capital in Early Childhood

Tomas Kinney

Social Policy

The University of Edinburgh

2018

Declaration

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.

Tomas Kinney

Abstract

This thesis explores whether cultural capital is a source of educational inequalities within early childhood. This is an area with very little prior research despite: (i) early childhood playing a crucial role in the cultural capital literature; and (ii) cultural capital being a well-studied source of inequality in educational research and yet not really featuring in the large amount of research which focuses on early childhood educational inequalities. This thesis therefore aims to help bridge this divide between two large bodies of research.

The two key questions this thesis sets out to explore are whether cultural capital is unequally distributed by a child's socio-economic background and whether a child's cultural capital has any educational benefits in early childhood. To answer these key questions, this thesis will employ data from the birth cohort study *Growing Up in Scotland*. This thesis will use data from when the first birth cohort are ten months old through to five years old. Early childhood is typically a period of great change and so having longitudinal data will allow me to look at whether cultural capital's accumulation and any educational effects it has are consistent over time. I will utilise several different types of statistical models, including regression analysis, structural equation modelling and multilevel modelling.

Cultural capital will be split into two separate components: reading and more formal cultural activities. This will be done to explore a debate in the literature on whether both of these components are educationally beneficial or whether it is simply the reading element.

The key findings from this thesis suggest that children from more advantaged backgrounds have higher levels of cultural capital and also that cultural capital has a positive educational effect within early childhood. These two results in combination lead us to conclude that cultural capital might be seen as a source of educational inequality within early childhood. However, despite cultural capital's positive educational effect, a number of other socio-economic factors, in particular social class, still have a large significant effect on a child's educational ability. This suggests that cultural capital can only partially explain educational inequalities in early childhood and should be thought of as one of a number of sources of educational inequality.

My results also suggested that a child's cultural capital mediates the educational benefits of several aspects of parental influence. For instance, parental cultural capital's educational benefits for a child seem to come entirely through a child's cultural capital. I also found that cultural capital is educationally beneficial to children from all levels of socio-economic status.

I found that both the reading and formal cultural activities components of a child's cultural capital were educationally beneficial.

Lay Summary of Thesis

The lay summary is a brief summary intended to facilitate knowledge transfer and enhance accessibility, therefore the language used should be non-technical and suitable for a general audience. (See the Degree Regulations and Programmes of Study, General Postgraduate Degree Programme Regulations. These regulations are available via: www.drps.ed.ac.uk.)

Name of student:	Tomas Richard Kinney	UUN	S0791210
University email:	s0791210@sms.ed.ac.uk		
Degree sought:	Social Policy PhD	No. of words in the main text of thesis:	51,000
Title of thesis:	Cultural Capital in Early Childhood		

Insert the lay summary text here - the space will expand as you type.

This PhD thesis looked at the concept of cultural capital within early childhood. Cultural capital is a concept developed by Pierre Bourdieu and is broadly defined as participation and knowledge of the dominant culture (e.g. theatre and art gallery attendance). Cultural capital is supposedly unequally distributed by social and economic factors. Bourdieu argues that cultural capital is rewarded within the education system and because it's unequally distributed, it is a key source of educational inequality.

This PhD looked at what factors were associated with a child's cultural capital and whether their cultural capital had any educational benefit. It used data from Growing Up in Scotland, a data set that followed kids annually from 10 months old to seven years old. The thesis found that cultural capital was unequally distributed in early childhood; children from more advantaged backgrounds had significantly higher levels of cultural capital throughout childhood. Cultural capital was also shown to be educationally beneficial in early childhood; higher cultural capital was associated with higher scores on educational ability scales after controlling for a range of other background factors.

Acknowledgements

I would like to thank my wonderful supervisors Lindsay Paterson and Ingela Naumann for all their guidance and feedback throughout this process. Their combined knowledge has amazed me constantly and helped me to no end in writing this thesis. Their support through difficult periods has been remarkable.

I would like to thank the Economic and Social Research Council (ESRC) who funded this thesis. Thanks also to John MacInnes who encouraged me to apply for a PhD and helped me to apply for this funding.

I would also like to thank the staff at the University of Edinburgh's counselling service who are as much to thank as anyone for me finishing this thesis. Finally, the kindest thanks go to my friends and family who have always been there for me. Whether it be through cups of tea or finally agreeing to never ask me "how's the PhD going?" again, I could not have done this without them.

Contents

List of tables

Tables of figures

1. Introduction

The earliest years of a child's life are crucial in terms of their development (Gertler et al., 2014; Phillips and Schonkoff, 2000). Experiences in early childhood resonate well into adult life meaning that inequalities in this period also have long-lasting consequences (Feinstein, 2003; Blanden, 2006). Evidence has shown that inequalities in early childhood are prevalent in the UK (Waldfogel and Washbrook, 2011; Sylva et al., 2008; Bradshaw and Tipping, 2010).One source of educational inequality that has not been widely studied within this age group is cultural capital (Dumais, 2006).

Cultural capital, a concept developed by Pierre Bourdieu, can be broadly defined as a "familiarity with the dominant culture" (Bourdieu, 2003, p. 71). Cultural capital is a resource which will provide educational benefits to children and yet is supposedly unevenly distributed by social class (Bourdieu, 2003). This "knowledge of and participation in the dominant culture" (Sullivan, 2001, p. 896) has often been studied by focusing on participation in stereotypically high-brow cultural activities such as theatre and art gallery attendance. The fact that cultural capital has not been widely studied in within early childhood is very surprising given that cultural capital has been one of the most commonly studied sources of educational inequality (Jenkins, 2002) and that early childhood is stressed as a key period for the accumulation of cultural capital (Bourdieu, 1986; De Jager, 1967; Dumais, 2006). In general, early childhood research has neglected cultural capital and cultural capital research has neglected early childhood. My thesis will therefore explore the role of cultural capital within early childhood and help to bridge a gap between two large areas of research that have for the most part failed to crossover.

My research will aim to explore whether cultural capital is a potential cause of educational inequalities in early childhood. It will do this by first testing whether cultural capital is unequally distributed by socio-economic background in early childhood before testing whether cultural capital has an educational effect in early childhood after controlling for other potential causes of educational inequality. If I find that cultural capital is both unequally distributed and educationally beneficial then this could be seen as providing evidence that cultural capital is a source of educational inequality in early childhood.

The importance of early childhood in the accumulation of cultural capital has long been proposed in the literature. The initial accumulation of cultural capital supposedly "starts at the outset, without delay" (Bourdieu, 1986, p. 246) as parents high in cultural capital transmit this advantage to their children. An individual's cultural capital "always remains marked by its earliest conditions of acquisition" (p. 245). However, the lack of empirical research into this area (Dumais, 2006) means that there is a startling lack of evidence to support this claim either way. Findings from this thesis will therefore help to illuminate whether the unequal distribution of cultural capital is indeed present in early childhood. It will also help us to understand whether the accumulation of cultural capital is a constant process over time or whether, like many other processes within early childhood, it experiences great changes. The fact that so little research has been done on cultural capital in early childhood means that even very basic results which have been replicated time and time again in cultural capital research will be of great interest.

Studying the factors involved in the accumulation of cultural capital will also allow us to see how the distribution of cultural capital occurs in early childhood. Will it be unevenly distributed by parental cultural capital and socio-economic background as Bourdieu (1986) would suggest? It will be interesting to see if the same factors that have been associated with cultural capital levels in research on older children are factors here. Understanding what factors are involved in the accumulation of cultural capital becomes even more important if I find cultural capital is educationally beneficial. If cultural capital is educationally beneficial then knowing which factors are involved will hopefully shed light on some of the barriers to cultural capital and provide potential avenues through which the accumulation of cultural capital in early childhood could be promoted. This becomes especially important if I do find cultural capital is significantly lower among disadvantaged children.

If I find that cultural capital is unequally distributed in early childhood, finding whether cultural capital is educationally beneficial or not will help us to understand the consequences of any unequal distribution. While no educational effect would indicate cultural capital is not a key factor in early childhood educational inequalities, this would not signify that any unequal distribution of cultural capital was not problematic as there are many other channels through which participation in cultural activities has been shown to provide benefits (Elsey and Macmellon, 2010, p. 1).

One question crucial to understanding the potential educational inequalities of cultural capital centres around whether anyone can utilize cultural capital's supposed educational benefits.

This is a point of contention in the literature with certain authors (Bourdieu, 2003) arguing that upper-class children are best placed to make the most of cultural capital's educational benefits, other authors arguing (DiMaggio, 1982; Dumais, 2006) that its educational benefits are best utilized by those from a lower social class and a further set of authors (Aschaffenberg and Maas, 1997, Nagel, 2010) who argue that cultural capital's educational benefits can be utilized equally by all, regardless of one's social class. This will be a question I aim to answer in this thesis. While this will of course be useful in providing further evidence to add to this debate, especially in the context of early childhood, the real importance of this result lies in what it means for any potential attempts to redress the educational inequalities of cultural capital in this period if I find them.

If I find that cultural capital's educational effects were greater for those from advantaged backgrounds, then this would present any attempts to redress an unequal distribution of cultural capital with a large problem. Even if children from different social classes had the same levels of cultural capital, those from the higher social classes would be able to make greater use of any educational benefits attached to the cultural capital. Any attempts to reduce barriers to cultural capital would therefore be very complicated with the interaction between social class a difficult one to untangle. If it is found that cultural capital's educational effects are felt strongest by those most disadvantaged, this would again affect how we might think about redressing educational inequalities. Increasing access to cultural capital for disadvantaged children might therefore be a possible way of helping them 'catch up', potentially helping to make up for educational inequalities in other areas. If it is found that cultural capital's educational effects in early childhood can be utilized equally by all, regardless of social class, then this would simplify any attempts to redress the educational inequalities of early childhood cultural capital. This result would mean that equalizing access to cultural capital would mean the removal of its educational inequality. It could also mean that providing children low in cultural capital with greater access to cultural capital would provide them with the educational benefits they were missing from the low cultural capital.

Another key debate in the cultural capital literature concerns which elements of cultural capital are educationally beneficial. Certain authors (De Graaf 1986, 1988; Crook, 1997; De Graaf et al., 2000) have split cultural capital into two separate components: reading; and more formal cultural activities, such as trips to the museum and the theatre. These same authors have argued that cultural capital's educational benefit comes solely from the reading component. I feel this question on whether reading is the only educationally beneficial part of cultural capital will be

especially interesting in the context of early childhood where there has been such a huge push to encourage reading in this period (Reading Agency, 2015). As well as adding to this cultural capital debate, any answer on which elements of cultural capital are educationally beneficial will have important implications for how one might go about tackling educational inequalities in early childhood. If I find cultural capital is both unequally distributed and that both cultural activities and reading are educationally beneficial then this would suggest the promotion of both types of activity as good ways to redress those potential educational inequalities brought about by cultural capital. However, if I find that only reading has the educational benefit then any policy to redress educational inequalities associated with cultural capital would be better to focus specifically on reading.

This thesis will try to make sure that the concept of cultural capital, developed in the 1960s, is well suited to childhood modern society. This will involve using the concepts of cultural omnivorousness and cultural voraciousness which have both been shown to be important aspects of contemporary cultural consumption (Bennett et al., 2009; Kazt-Gerro and Sullivan, 2007, 2010). Cultural omnivorousness refers to a tendency to have a wide variety of cultural practices and tastes while cultural voraciousness refers to a tendency to participate frequently in cultural activities.

My research will use the birth-cohort study Growing Up in Scotland. This will be the first study to use this data to explore the role of cultural capital within early childhood. My research will benefit from using a birth-cohort study as it will allow me to look at the same group of children across their childhood. Having these different time point measures also allows my research to explore any changes in the nature of cultural capital which is hugely beneficial. Early childhood isn't a static period – in fact, it is rather the opposite (Phillips and Schonkoff, 2000; Dearden et al., 2011; Bromley, 2009; Bradshaw, 2011; Feinstein, 2003) – and so it is crucial that my research can engage with this. I will be able to look at whether different factors affect the accumulation of cultural capital at different ages and be able to explore whether any educational effect cultural capital might have is consistent across early childhood. To answer these questions this thesis will use a variety of different types of statistical analysis, including linear and logistic regressions, multilevel models and structural equation modelling.

Understanding the dynamics of cultural capital accumulation in early childhood will not only shed light on an under-explored aspect of cultural capital research but it also has ramifications for how policy might try and target any interventions if I do find cultural capital is a source of

educational inequalities in early childhood. Knowing if there is a specific age where inequalities in cultural capital accumulation are most pronounced or if there is an age when a certain socio-economic factor becomes important for cultural capital accumulation will help to increase the effectiveness of any policy trying to equalize cultural capital's effects.

2. Literature Review

It is well established that the first few years of a child's life are monumental in terms of their overall development, setting the "foundations for lifetime success" (Gertler et al., 2014, p. 998). Many studies have shown how cognitive development around this age is highly associated with outcomes later in life; e.g. Feinstein's (2003) study found that children's test scores at age 22 months were highly correlated with their labour-market performance at age 26. Given the effects development in early childhood still has later in life, educational inequalities in this period can have long lasting consequences: Heckman and Carneiro (2003) showed that the inequalities they viewed in early childhood persisted well into later schooling while Blanden (2006) showed that test scores at age five were a key indicator of whether a child would remain in poverty later in life.

Considering the importance of understanding educational inequalities within early childhood, one source of educational inequality which has not been widely studied within this age group is cultural capital.

Cultural Capital

Bourdieu's theory of cultural reproduction

Bourdieu states there are three main forms of capital: economic, cultural, and social (Bourdieu, 1997). Economic capital can be converted into money and can be "institutionalized in the form of property rights" (Bourdieu, 1986, p. 243). Social capital is made up of social obligations and can be converted into economic capital. However, it is cultural capital which is the most crucial form of capital for Bourdieu's theory of social and cultural reproduction. Cultural capital is broadly defined as a "knowledge of and participation in the dominant culture" (Sullivan, 2001, p. 896). Bourdieu splits cultural capital into three forms: the embodied state; the objectified state; and the institutionalised state. Objectified cultural capital can be seen as cultural goods such as books and pieces of artwork (Bourdieu, 1986; Georg, 2004, p. 334), while an example of institutionalised cultural capital is educational qualifications. The embodied state refers to "long lasting dispositions of the mind and body" (Bourdieu, 1986, p. 243); this is the most

important form of cultural capital for Bourdieu since it is the form most concealed in its relationship to economic capital.

Bourdieu's theory of cultural reproduction charges the educational system as the key means by which the social hierarchy is maintained and reproduced. This occurs due to the emphasis which the school places on cultural capital. Bourdieu states that the school presupposes that all students will be in possession of the same level of cultural capital upon entry to school, overlooking the fact that cultural capital is unequally distributed among the social classes. In this way the school "demands of everyone alike that they have what it does not give" (Bourdieu, 2003, p. 71). Bourdieu states that cultural capital is transmitted to children from their parents. The education system requires "initial familiarity with the dominant culture" (Bourdieu, 2003, p. 71) and so immediately children are advantaged or disadvantaged depending upon the level of cultural capital their family have. Those children of families with high cultural capital arrive at school already with a firm knowledge of the dominant culture and the inherited means by which to appropriate it, which will be crucial to their early educational success. Because cultural capital is unevenly spread across the social classes (Bourdieu, 1986), lower-class pupils are immediately disadvantaged compared to their middle- and upper-class peers.

This embodied cultural capital is so concealed from economic capital that it is mistakenly attributed to being based on natural "gifts, merits, or skills" (Bourdieu and Passeron, 1990, p. 496). The educational qualifications eventually obtained are used to legitimise the social hierarchy which has essentially been reproduced. When working-class children do manage to succeed in the educational system, this is used as proof that it is based on meritocracy and further legitimises it.

One important element of Bourdieu's model is that cultural capital's "acquisition is deeply embedded in elite families' socialization patterns" (Kingston, 2001, p. 92) with the transmission of cultural capital occurring "only for the offspring of families endowed with strong cultural capital" (Bourdieu, 1986, p. 246). Bourdieu's claim then that the positive educational effects of cultural capital "can be received and acquired only by subjects endowed with the system of predispositions that is the condition for the success of the transmission and of the inculcation of the culture" (Bourdieu, 2003, p. 71) means that those who grew up in a family high in cultural capital can best reap the educational rewards of cultural capital.

Bourdieu's cultural reproduction theory has been very influential in educational research (Jenkins, 2002). This has led to many empirical studies focusing on the relationship between

cultural capital and educational success. This research has tended to suggest that cultural capital has "modest but positive effects" (Wildhagen, 2009, p. 175) on a range of different educational outcomes (DiMaggio, 1982; DiMaggio and Mohr, 1985; Teachman, 1987; Farkas et al., 1990; Kalmijn and Kraaykamp, 1996; Aschaffenburg and Maas, 1997; Roscigno and Ainsworth-Darnell, 1999; Sullivan, 2001; Dumais, 2002). However, Bourdieu's own studies on cultural capital's educational effects are less than convincing with only bivariate analyses ever presented (De Graaf, 1986, p. 238). Findings such as "a very pronounced correlation may be observed between academic success and the family's cultural capital" (Bourdieu, 2003, p. 76) are cited as evidence of the cultural reproduction theory, glossing over the fact that correlation is not causation.

Early childhood cultural capital

One idea which is key to Bourdieu's theory of social and cultural reproduction is that the acquisition of cultural capital begins before the child starts school through parental transmission. This transmission supposedly begins as soon as the child is born:

> "the initial accumulation of cultural capital, the precondition for the fast, easy accumulation of every kind of useful cultural capital, starts at the outset, without delay, without wasted time, only for the offspring of families endowed with strong cultural capital; in this case, the accumulation period covers the whole period of socialization." (Bourdieu, 1986, p. 246)

Bourdieu again emphasizes how important this period is, stating that cultural capital "always remains marked by its earliest conditions of acquisition" (1986, p. 245). If pupils do not acquire enough cultural capital before entering school then they will be lacking in what Bourdieu sees as the key skills to succeed in the educational system. Dumais (2006, p. 84) argues that the impact of class differences in cultural capital should be apparent in very young children, with clear differences in place by the time the child reaches school.

Nagel (2010) highlights that in the Netherlands, De Jager (1967) also stressed the importance of early childhood for cultural participation; De Jager (1967) believed growing up in a family high in cultural capital led to a lifelong advantage in cultural participation levels. Nagel (2010) believes that while Bourdieu and De Jager both stress the importance of early childhood in the accumulation of cultural capital, neither has "offered convincing empirical results in support of it" (Nagel, 2010 p. 542).

While there have been countless studies into cultural capital, only a tiny proportion have studied the accumulation and effects of cultural capital in early childhood, despite it being a key tenet of Bourdieu's theory. Dumais (2006, p. 84) has argued that there is practically no quantitative studies on young children's cultural capital and that those that have looked at cultural capital in early childhood have largely relied on retrospective accounts. For instance, Aschaffenburg and Maas (1997, p. 584) concluded from their study on the intergenerational transmission of cultural capital that "later cultural capital is a direct consequence of early cultural socialization". However, their measure for early cultural socialization was a retrospective one measured when the child was fourteen.

One quantitative study which has attempted to look at the role of cultural capital in early childhood is Dumais' (2006). Dumais (2006) studied US kindergarten students (aged around 5) and looked at how their levels of cultural capital affected how their kindergarten teachers perceived their academic ability. She found that after controlling for a range of background measures, including measured reading ability, cultural capital had no significant effect on teacher's perception of the pupil's ability. She did find that children whose parents were high in socio-economic status had a higher level of cultural capital.

There has also been research on the role of cultural activities in early childhood that has not explicitly mentioned the role of cultural capital. A report commissioned by the Scottish Government into the importance of arts and culture in early childhood concluded that early participation in cultural activities has positive benefits for children's "education, emotional well-being and behaviour" (Elsey and Macmellon, 2010, p. 1). Much of the research on early childhood exposure to cultural activities has focused on its effect on children's participation in cultural activities later in life. Research has consistently shown that exposure to cultural activities in early childhood is strongly linked to participation in cultural activities as an adult (Bell et al, 2009; Scottish Government, 2009; Oskala et al, 2009; Orend, 1988; McCarthy et al, 2001; FreshMinds, 2007; Centre for Economics and Business Research, 2007; Walker et al, 2002). In particular, research has shown that positive experiences of cultural activities in early childhood are associated with participation later in life while negative early experiences reinforce negative beliefs that cultural activities are 'not for them' or are boring and dull (PLB Consulting, 2001; FreshMinds, 2007). Several studies showed that early childhood participation in cultural activities was significantly associated with participation later in life even after background factors like educational background, social class and income were controlled for (Oksala et al, 2009; Walker et al, 2002). Reasons why these positive early

experiences lead to later engagement include familiarity, demystifying the event and knowing how to behave (Oksala et al, 2009). These studies highlight the importance of participation in cultural activities in early childhood, showing that these experiences have a significant effect in later life. They provide support for the idea that the accumulation of cultural capital in early childhood is important for an individual's cultural capital later in life.

Cultural mobility model

However, while the concept of cultural capital originated from Bourdieu's cultural reproduction model, there is a competing model that also utilises cultural capital as its central concept – the cultural mobility model (DiMaggio, 1982). The cultural mobility model states that "cultural capital facilitates the academic success of anyone who has it" (Kingston, 2001, p. 92). Meanwhile, several authors (DiMaggio, 1982; Kingston, 2001) argue that Bourdieu's cultural reproduction model ascertains that cultural capital is only a resource for higher-class individuals as they believe if non-elite students benefited from cultural capital then this "directly counters Bourdieu's claim that its acquisition is deeply embedded in elite families' socialization pattern" (Kingston, 2001, p. 92). However, it is worth pointing out that these are these particular authors' readings of Bourdieu's cultural reproduction model and that Bourdieu himself is never explicit in saying cultural capital is only of benefit for higher-class children.

The cultural mobility model was first introduced in DiMaggio's (1982) widely cited study. In this study he showed that cultural capital, measured using self-reported involvement in art, music, and literature, was significantly related to high grades even after controlling for academic ability. He also formulated a competing model to the cultural reproduction model whereby cultural capital's effect on educational outcomes was net of family background whereas he believed that in Bourdieu's model cultural capital mediated the relationship between family background and educational outcomes. DiMaggio (1982) found evidence in favour both of the cultural mobility model and the cultural reproduction model.

There is confusion over the exact nature of the cultural mobility model. Some scholars (DiMaggio, 1982; Dumais, 2006) have stated that lower-class children gain more educationally than others from cultural capital under this model whereas others (Aschaffenberg and Maas, 1997; Kingston, 2001) see cultural capital as an equal resource for all under this model. Using interaction effects, one should be able to see who cultural capital is more beneficial for: higher-class individuals (evidence for the cultural reproduction model); lower-class individuals

(evidence for DiMaggio's (1982) cultural mobility model); or it has the same net effect for everyone (evidence for Aschaffenberg and Maas' (1997) cultural mobility model).

Goldthorpe (2007) has launched a particularly scathing attack on Bourdieu's theory of cultural reproduction, claiming it has "serious inherent weaknesses" and has been "overwhelmingly contradicted by empirical evidence" (p. 2). He states that there is clear evidence of upward educational mobility in the modern world and uses this to criticise Bourdieu's idea of the "family as the only, or even the main, locus of the transmission of cultural capital" (Goldthorpe, 2007, p. 9) as unsustainable. This criticism certainly has some weight behind it and gives another reason why the cultural mobility model might be a good competing theory. In the cultural mobility model, while the family is an important part of the transmission of cultural capital, it is not the only mechanism (Nagel, 2010). The cultural mobility model also provides the possibility for upwards educational mobility which Goldthorpe believes the cultural reproduction model is missing.

Golthorpe (2007) argues that many sociologists have used Bourdieu's concept of cultural capital in ways that "are clearly not compatible with Bourdieu's general theoretical position" (p. 18) which has led to them mistakenly interpreting their findings as support for Bourdieu's theory. This relates to my point earlier that there are numerous studies on cultural capital which utilise the cultural mobility model without ever acknowledging this fact.

However, while it might seem that Goldthorpe would be slightly more accepting of the cultural mobility model, this is not true. Goldthorpe (2007) is severely critical of those that believe Bourdieu's work is open to "qualification, refinement, development, etc." (p. 11). In this way, he would certainly be critical of the adoption by many of the cultural mobility model as it prises the concept of cultural capital away from Bourdieu's theory with Goldthorpe (2007) clear that Bourdieu's work has to be judged on the paradigm level, as either "a major social scientific advance or...a failure" (p. 12).

There have been several studies (DiMaggio, 1982; Teachman et al., 1997; De Graaf et al., 2000; De Graaf and De Graaf, 2002; Dumais, 2006; Nagel, 2010) which have explicitly provided evidence in favour of the cultural mobility model. Kingston (2001, p. 92) believes that evidence in favour of the cultural mobility model "severely undermines" Bourdieu's model. A very early work which provided evidence for this more flexible theory came from Halsey, Heath and Ridge's (1980) study. Their book stated that through the expansion of grammar schools, students from poorer backgrounds were being provided with cultural capital which they used

to their advantage (Halsey et al., 1980, p. 77). The students in this study supposedly accumulated cultural capital outside their family of origin which is possible within the cultural mobility model, unlike the cultural reproduction model (Nagel, 2010). Many modern studies using cultural capital adopt the cultural mobility model even if they do not explicitly acknowledge this fact. They run regressions controlling for family background and look at cultural capital's isolated educational effect, treating cultural capital as a resource that anyone can draw upon regardless of social background. According to DiMaggio (1982) and Kingston (2001) this is in contradiction to Bourdieu's model where cultural capital is seen only as a resource for the upper classes.

Rather than solely seeing cultural capital as a resource which maintains the social hierarchy, under the cultural mobility model providing access to cultural capital could be seen as a "practical and useful strategy for low status students who aspire towards upward mobility" (DiMaggio, 1982, p.190). If the cultural mobility model holds true then this means that we might propose increasing access to cultural capital as a means to reduce educational inequalities and increase social mobility. It is therefore important that this thesis explores whether there is evidence to support the cultural mobility model or the cultural reproduction model as this will have important consequences for how we might view any educational effects a child's cultural capital may have.

Information processing vs. status seeking theories

There have been wide debates on the reasons why cultural capital might be educationally advantageous. Two of the main schools of thought are the 'status-seeking theory' and the 'information processing theory' (Ganzeboom, 1982). The 'status-seeking theory' suggests that cultural activities are linked to social status and that participating in 'high' culture communicates high status (Ganzeboom, 1982). The 'information processing theory' which was first presented by Ganzeboom (1982) has been used to propose another mechanism for cultural capital's educational benefit: cultural participation also promotes the development of "cultural knowledge" (Sullivan, 2007, p. 2) and "linguistic and cognitive skills" (De Graaf and De Graaf, 2002, p. 183).

One of the most commonly proposed mechanisms by which the status-seeking theory would allow cultural participation to be converted into educational success is through teachers. DiMaggio (1982) proposed that teachers "communicate more easily with students who participate in elite status cultures, give them more attention and special assistance, and perceive

them as more intelligent or gifted than students who lack cultural capital" (p. 190). However, this explanation does not illustrate how teachers identify if students have participated in cultural activities. One way that teachers could recognise students high in cultural capital is by the students displaying cultural attributes (Sullivan & Brown, 2015, p. 1). This is something which has been somewhat backed up with Farkas et al. (1990) concluding from their study that teachers favour students who display 'cultured' traits. However, Broderick and Hubbard (2000) examined the assumption that teachers value students with knowledge of elite culture using data from the National Educational Longitudinal Study. Their study showed that teachers' valuations of children were not associated with the children's levels of cultural capital. Broderick and Hubbard's (2000) study therefore suggests that the idea that teachers can recognise cultural capital and consequently will be impressed by it is not entirely empirically accepted. Additionally, Sullivan (2001) believes that while this idea of teachers being the main mechanism for cultural capital is perhaps plausible in America where grades awarded by teachers are important, in countries like the UK, where key educational outcomes come through results gained in the national curriculum, this seems less likely. However, Sullivan (2001) here perhaps naively ignores the impact a teacher's judgement of children can have on their learning process.

The information processing theory was first presented by Ganzeboom (1982) as a way of explaining why high-status individuals engaged more frequently in formal cultural activities. He suggested that more exclusive cultural events require more complex processing from the participant. He noted that one of the key reasons for differences in the ability to process cultural stimuli is due to a person's "knowledge of and acquaintance with a cultural field" (Ganzeboom, 1982, p. 187). This assertation that knowledge and acquaintance with a cultural field could increase a person's ability to understand complex cultural stimuli allowed scholars (De Graaf and De Graaf, 2002; Sullivan, 2007) to propose another use of the information processing theory: cultural participation develops cultural knowledge and skills. This explains why cultural capital can have a positive impact on educational success: it develops cognitive skills (De Graaf and De Graaf, 2002, p. 183) such as cultural knowledge and vocabulary (Sullivan, 2001) which "actually foster intellectual development" (Sullivan & Brown, 2015, p. 1) and are thus beneficial for educational achievement.

One advantage of the information processing theory is that, unlike the status-seeking theory, it fits coherently with the cultural mobility model discussed earlier. If cultural capital is an educational resource that anyone in possession – regardless of social status – can use, then it is

difficult to conceive how the status-seeking theory can fit in. In the status-seeking theory, cultural capital helps communicate the high status of the child to their teachers. However, it is difficult to see how the child's communication of status couldn't be incredibly interweaved with other class aspects related to the child such as their accent or dress sense. In this sense, the status-seeking theory is far more suited to the traditional cultural reproduction model whereby already advantaged students can make better use of their cultural capital. With the information processing theory there is a very clear avenue through which cultural capital can be an educational resource for anyone who is in possession of it. The skills and knowledge through which participation in cultural activities supposedly helps develop, according to the information processing theory, are available for anyone regardless of social standing.

Lareau and Weininger (2003) believe the 'dominant interpretation' of cultural capital in research tends to partition the effects of cultural capital from those of educational skills (p. 568). The authors describe research which assumes "cultural capital is both conceptually distinct from and causally independent of ''technical'' skill or knowledge" (p. 580) as problematic. Lareau and Weininger (2003) believe there is no evidence from Bourdieu's writings that cultural capital should be separated from ability or skills and indeed argue that instead Bourdieu considers them to be "irrevocably fused" (p. 580). Indeed Bourdieu (1986) states that "ability or talent is itself the product of an investment of time and cultural capital." (p. 244)

Sullivan (2007) argues that this is a key difference between studies that focus on the status-seeking theory and those that adopt the information processing theory. Studies that follow the status-seeking theory believe cultural capital largely communicates status and so is separate of ability. These studies often then include a background measure of measured ability when trying to determine the effects of cultural capital. On the other hand, the information processing theory believes that cultural capital helps develop certain skills and knowledge. It therefore makes no sense for these studies to include background measures of ability as they believe these measures of ability are partly to do with cultural capital (Sullivan, 2007).

The direction of more contemporary research on cultural capital has tended to side with the information processing theory. Crook (1997) and De Graaf et al. (2000) conclude from their studies that cultural capital's educational benefit comes from the educative resources such as cognitive skills which cultural capital develops. Sullivan (2001) took from her study that the

key reasons for cultural capital's educational effect was its advancement of the child's cultural knowledge and linguistic ability.

Different components of cultural capital

The status-seeking theory and the information processing theory both have implications for which type of cultural activities should be viewed as educationally beneficial. Linked to the status-seeking theory is the assumption that public cultural activities are more effective at communicating status than private cultural activities. This is supposedly because being seen at a cultural event would transmit status to those in attendance. Therefore, being seen at a public cultural activity such as the theatre is a lot easier than being seen doing a more private cultural activity such as reading a book. Utilising this idea, several studies (Lamb, 1989; Katsillis & Rubinson, 1990) looked at cultural capital's educational effect by looking solely at public cultural activities such as concert and theatre attendance whilst eschewing more private cultural activities such as reading. However, it has become apparent that this divide between public and private cultural activities is not particularly useful. It rests on the assumption that being seen at a cultural event could communicate high status which as Sullivan (2007) correctly points out is very dated. Sullivan (2007) also criticises this public-private divide for being too simplistic – is reading a book on public transport a public or private activity, for example?

Another divide that has been formulated is that between reading and beaux-arts. Beaux-arts, also referred to as formal cultural activities, refer to "public and highly exclusive forms of cultural participation" (Sullivan, 2007, p. 2). This division between cultural activities was proposed by De Graaf (1986, 1988) and is linked to the information processing theory. Researchers such as Crook (1997) and De Graaf et al. (2000) argue that reading develops skills leading to educational rewards whereas participation in formal cultural activities does not develop any specific skills and would only be important if the status-seeking theory held up. De Graaf and De Graaf (2002) argue that only reading provides a child with tangible cognitive skills through the "development of a child's language skills" (p. 171). I believe this conclusion is flawed. Research has shown that public cultural activities such as museums or art galleries are in fact associated with educational benefits (Galloway, 2008) while neuroscientific research, which I will expand upon later, has shown that music lessons, commonly seen as a formal cultural activity (Sullivan, 2001), had significant effects on a child's brain size in motor areas (Hyde et al., 2009) and neural network efficiency (Moreno et al., 2009). These are clear examples of the formal cultural activities component developing children's cognitive skills and

are why I believe finding educational benefits for this component shouldn't necessarily be seen as negating the information-processing theory as others have suggested (De Graaf and De Graaf, 2002; De Graaf et al., 2000). However, as I am following the information-processing theory, it makes sense to explore this divide between reading and formal cultural activities as so much of the research which has followed the information-processing theory has done so.

While Sullivan (2001, 2007) is a strong advocate of the information-processing model, she does not believe in the distinction between reading and beaux-arts. Instead, Sullivan believes that it is the linguistic elements of cultural capital which are educationally beneficial as these develop skills such as vocabulary and styles of expression (Sullivan, 2001). She concludes this from her research which showed that reading and high-brow television viewing were educationally beneficial but other cultural activities were not (Sullivan, 2001). However, it could be argued, in a similar vein to Sullivan's (2007) criticism of the public-private distinction, that a distinction between language-based cultural activities and non-language-based cultural activities is far too simplistic. How would we define a language-based activity? Sullivan (2001) lists theatre attendance under non-language-based activities in her study but it would be very difficult to argue that watching a Shakespeare play doesn't involve a language element, especially when Sullivan does include high-brow television viewing as a language-based activity.

Cultural omnivorousness and cultural voraciousness

It is important for any study on cultural capital to acknowledge how different the cultural landscape is since Bourdieu's *Distinction* (1984). France in the 1960s where Bourdieu carried out his research is not the same place as 21st century Britain and any modern understanding of cultural capital must take this into account. Even Sullivan's (2001) study which gave a far more updated vision of cultural capital was written before Facebook, YouTube and Twitter were even invented and subsequently before the real explosion of the internet as a means of cultural consumption and proliferation. It is wise therefore to utilise Bennett et al.'s (2009) study on modern British cultural practices and tastes to generate an up-to-date concept of cultural capital for research. According to their study, the two key elements of cultural capital in modern Britain are cultural omnivorousness and cultural voraciousness: cultural omnivorousness is defined by a huge diversity of cultural tastes and practices while cultural voraciousness is the tendency of individuals to try to consume as much culture as possible.

The idea of the cultural omnivore stems from Peterson's research (Peterson & Simkus, 1992; Peterson & Kern, 1996; Peterson, 2005). His research showed that well-educated, middle-class individuals were incredibly omnivorous in their cultural tastes and practices – their tastes and practices covered a hugely diverse range of genres and activities. These individuals were no longer focused exclusively on 'high' culture; instead, their tastes spanned between both high and popular culture. However, this propensity to consume and participate in a wide variety of different cultural genres and activities was largely restricted to the well-educated middle classes.

Bennett et al. (2009) are adamant from their research that cultural omnivorousness is a key element of cultural capital in contemporary Britain, where the ability to judge tastes from diverse genres is respected. The authors showed that for modern British cultural practices and tastes, the greatest divide is no longer between high and popular culture; instead, it is between individuals who are culturally active and engaged in a wide range of activities and between those who are far less culturally active with a much more limited range of activities that they participate in. Interestingly, the authors show that this divide overlaps with class and educational inequalities – highly educated, middle-class individuals were more likely to participate actively and widely in cultural activities. They link the emergence of cultural omnivorousness with the rise of the media, which they believe helped the sharing of cultural tastes. The book concludes that a cultural omnivorous orientation "defines cultural capital today" (Bennett et al., 2009, p. 177) which means it is vital that my thesis contains a measure for cultural omnivorousness.

Previously, cultural capital has been thought of largely as the participation and appreciation of highly exclusive cultural activities, such as art galleries and classical music. However, the rise of cultural omnivorousness has called into question the importance of these activities now that high-status individuals supposedly appreciate and participate in wide ranging cultural activities, including popular culture. However, while cultural omnivorousness is about wide and varying cultural practices, it is important to note that cultural omnivores do not like everything indiscriminately; rather, it is about an *openness* to appreciating everything (Bennett et al., 2009). This caveat is very important when we think of the role of 'high' or legitimate culture.

While some older middle-class individuals in Bennett et al.'s (2009) study still viewed 'high' culture as a status symbol, amongst younger individuals – who were more omnivorous – this

snobbishness about culture was not seen. However, while these higher-class cultural omnivores do participate in and appreciate both 'high' and popular culture, they *regularly* participate in high-brow cultural activities which are their preference (Bennett et al., 2009). The authors also show that among working-class individuals, a lack of participation in 'high' culture is still fairly widespread. Bennett et al. (2009) believe that a command of high-brow culture is still profitable. So, whilst cultural omnivorousness is a crucial element of cultural capital in contemporary Britain, it seems as though its importance is still linked with high-brow cultural activities. It is therefore important that studies utilising cultural omnivorousness are still selective about which cultural activities are included.

Linked to the idea of cultural omnivorousness is cultural voraciousness which refers to "the frequency of participation in specific cultural activities" (Katz-Gerro and Sullivan, 2007, p. 125). Katz-Gerro and Sullivan (2010, p. 194) argue that cultural voraciousness is well suited to modern studies on cultural capital as it can "be related to theories of the changing pace of life and leisure in late modernity." Bennett et al.'s (2009) account of cultural capital in modern Britain suggests that highly educated, middle-class individuals are not only culturally omnivorous but also have a high appetite for the consumption of cultural activities which they participate frequently in and are therefore said to be culturally voracious. Bennett et al. (2009) believe that these high-status individuals are largely voracious in their participation in high-brow cultural activities. Cultural voraciousness is designed to complement cultural omnivorousness (Katz-Gerro and Sullivan, 2010) and so it is beneficial for studies to use both of these two concepts in tandem.

Using cultural voraciousness as an element of cultural capital also allows research to engage with the argument that there is an investment metaphor implied by the term "capital" which has been ignored too often in research on cultural capital (Aschaffenburg and Maas, 1997; Robson, 2003). Bourdieu (1986, p. 253) himself notes that key to cultural capital is "the amount of time devoted to acquiring it". Aschaffenburg and Maas (1997) and Robson (2003) criticise measures for cultural activities which do not take into account how often a particular activity is done, rather just noting if an individual participates at all. In many studies, variables such as "Have you been to the theatre in the last year?" are used which obviously cannot discern between an individual who goes to the theatre once a year and an individual who goes once a week.

Robson (2003) tries to capture the investment metaphor of cultural capital in her own study using diaries from teenagers in the 1970 British Cohort Study. While this seems a very apt way of looking at an investment side of cultural capital, unfortunately her study ultimately falls short of managing to do what she sets out. This is largely to do with problems from the data, with the diary only covering a week and having massive amounts of missing data. In the end Robson (2003) uses a measure which counts if respondents did a particular activity in that particular week which seems not too dissimilar from the one-time measures she was so critical of. Utilising cultural voraciousness provides a key way of exploring this investment aspect.

Both cultural voraciousness and cultural omnivorousness have been associated with "being better educated, being located in an upper-class position, and having a higher income" (Katz-Gerro and Sullivan, 2010, p. 194). If this study is to use these two concepts then it seems vital to explore their association with social class, parental education level and income.

Parental cultural capital

It is vital that any study exploring cultural capital in early childhood has a measure for parental cultural capital. As discussed earlier, the accumulation of cultural capital in early childhood is inherently linked to parental cultural capital according to Bourdieu (1986) who notes that "differences in the cultural capital possessed by the family imply differences first in the age at which the work of transmission and accumulation begins" (p. 246) and that the easy accumulation of cultural capital occurs "only for the offspring of families endowed with strong cultural capital" (p. 246). Parents from higher social classes will tend to have more cultural capital than parents from lower social classes (Aschaffenburg and Maas, 1997, p. 575). Studies on the transmission of cultural capital have shown evidence of a strong relationship between parental cultural capital and a child's cultural capital (Van Eijck, 1997; Nagel and Ganzeboom, 2002; De Vries, 2006; Nagel, 2010; Becker, 2014).

One of the main problems with many earlier quantitative studies of cultural capital is that they either focused solely on the child's cultural capital (DiMaggio, 1982; DiMaggio and Mohr, 1985) or solely on parental cultural capital (DeGraaf, 1989; Teachman, 1987). Aschaffenburg and Maas (1997) argue that focusing on only one of these types of capital ignores "the dynamics of cultural capital" (p. 574). Without both measures the transmission and inheritance aspect of cultural capital is completely neglected. It is important therefore that studies on cultural capital incorporate a measure for parental cultural capital as well as the child's cultural capital.

One interesting aspect of the early transmission of cultural capital according to Aschaffenburg and Maas (1997, p. 575) is that "where the dividing line between parental resources and children's own cultural capital falls is not clear." For instance, if a parent takes a young child to the museum or library, we could view this both as demonstrating the cultural capital of both the parent and the child. We can see here how the transmission of cultural capital doesn't necessarily need to be a one-way process.

Parental engagement is also seen as a key indicator for a child's participation in cultural activities (Elsley and Macmellon, 2010, p. 1). Bamossy (1982) and Walker et al (2002) have both shown that parental interest and parental engagement in cultural activities increases the likelihood that the child will be engaged in cultural activities. Often parents suffer from a lack of self-confidence around cultural institutions (Creative New Zealand, 2009) or perceive them as being exclusive and requiring skills which the parents do not think they have (PLB Consulting, 2001).

The role of parental cultural capital has also been explored very interestingly in qualitative research. Lareau and Horvat's (1999) study looked at how parents used their cultural capital in their interactions with their child's school. Amongst other things the authors deemed parents' large vocabularies and a sense of entitlement to speak as equals with teachers as elements of cultural capital. They concluded that those parents rich in cultural capital were extremely adept at negotiating school interactions for their child's benefit, while those lower in cultural capital struggled with these interactions. Lareau and Horvat (1999) provide a very detailed definition of parental cultural capital as "large vocabularies, sense of entitlement to interact with teachers as equals, time, transportation, and child care arrangements to attend school events during the school day" (p. 42). Similarly to Lareau and Horvat's (1999) study, Reay (2004) has also looked at parents' interactions with teachers. Reay (2004) came to similar conclusions that middle-class parents, high in cultural capital, felt much more comfortable interacting with teachers than their working-class counterparts did, which created more options for their children.

One especially interesting study involving parental cultural capital is Lareau's (2002) study into social class and childrearing. She studied both working-class and middle-class parents' interactions with their children and concluded that middle-class parents engage in a parenting style she refers to as 'concerted cultivation' (Lareua, 2002, p. 748). This practice involves parents enrolling their children in a wide range of organised activities which they believe

"provide a learning ground for important life skills" (Middle-class mother quoted in Lareau, 2002, p. 755). This concerted cultivation approach results in middle-class children gaining a wide range of different experiences which Lareau (2002) believes helps foster a growing sense of entitlement within middle-class children. Lareau (2002) showed that working-class children participated in far fewer organised activities.

Both Sullivan (2001) and Lareau (2002) stress that parental cultural capital is highly associated with both social class and parental education level and so it would be worthwhile if my study explored whether this was the case in my own data. Lareau (2002) stresses that while social class and parental education level were important in parents following a concerted cultivation approach, the role of economic resources should not be underestimated. Practising concerted cultivation requires "reliable private transportation and flexible work schedules to get children to and from events" which middle-class families have a disproportionate amount of (Lareau, 2002, p.771). Lareau (2002) showed that there were many poor and working-class parents who wished to embrace the principles of concerted cultivation but lacked the economic resources to enrol their children in such a wide variety of cultural activities. This highlights an important point which a great deal of research on cultural capital ignores. Often research suggests that the only thing restricting children from taking part in cultural activities is having parents low in cultural capital. However, this isn't true; we know cultural activities are expensive, time consuming and often exclusionary. While many cultural activities such as museum, library and art gallery attendance are often free, it is important to recognise the hidden costs for these trips such as bus fares, non-free exhibits and overly priced gift shops and cafes. It is vital that we don't get into the habit of blaming parents low in cultural capital for their children not having high levels of cultural capital.

Choosing between the cultural reproduction model and the cultural mobility model has wide ramifications for other theoretical decisions in any study. Nagel (2010) has argued that this distinction between the two models affects how we view the process whereby individuals acquire cultural capital. According to Nagel (2010), the cultural reproduction model asserts that cultural capital can only be acquired through parental transmission and so those children with parents low in cultural capital can never acquire high levels of cultural capital. However, according to the cultural mobility model, while parental cultural transmission is important for the child's cultural capital, its influence is not "overwhelming" (Nagel, 2010, p. 543). This is a very important distinction between the two models as it provides an avenue through which social mobility can occur.

Whilst, according to Nagel (2010), parental cultural capital is of slightly less influence in the cultural mobility model than in the cultural reproduction model, its importance is still very substantial. It is therefore important that any study looking at the cultural mobility model must have a measure for parental cultural capital. However, when looking at how cultural capital is acquired, the cultural mobility model importantly leaves substantial room for other factors to have an influence. However, this of course brings up the question: if parental cultural transmission is still an important element of the child's cultural capital accumulation, then how can a child from a family low in cultural capital obtain cultural capital themselves? It is therefore also important that any study into the cultural mobility model also explores what other factors might influence a child's accumulation of cultural capital other than parental cultural capital.

Therefore, my study will ask both "Does parental cultural capital influence a child's accumulation of cultural capital?" and "What factors other than parental cultural capital are associated with the accumulation of cultural capital in early childhood?"

Other factors associated with cultural capital

Several studies have shown that aspects of family background other than parental cultural capital are associated with cultural capital. Indeed, several studies (Van Eijck, 1996; Nagel and Ganzeboom, 2002) have shown that family background has a larger effect on a child's cultural capital than parental cultural capital. Both cultural omnivorousness and cultural voraciousness have been shown to be strongly linked to education level, social class and income (Bennett et al., 2009; Peterson & Simkus, 1992; Peterson & Kern, 1996; Peterson, 2005; Katz-Gerro and Sullivan, 2010). A Scottish Government (2009) study using the Scottish Household Survey Culture (and Sport) Module found that children from the most deprived areas had been taken to theatres, museums, historic sites, galleries and libraries the least and this result was also found for parental educational level and household income (Scottish Government, 2009).

There is also some evidence to suggest that family composition affects the cultural participation of children. Blake (1989) has suggested that first-born children who do not have a sibling born for a relatively large period of childhood are advantaged in terms of their cultural participation during early childhood. Blake (1989) suggests that first-borns may experience an advantage in cultural participation because at this point parents may be at the "peak of enthusiasm" (p. 135) which leads to them interacting more with the child. This has been somewhat backed up by other studies which have shown that parents interact more with first-born children when they

are younger (Lindert, 1977). Van Eijk (1997) has also shown differences in cultural participation between elder and younger siblings with older siblings' cultural participation relying more on their family's background (p. 221) It may therefore be useful to control for children being first-borns and whether the child had any siblings born since the survey started when looking at a child's cultural capital accumulation in early childhood.

Having these variables in my study will also be useful as controls for any educational model I run as there is also evidence that family composition can impact on a child's educational attainment. Micklewright (1989, p. 33) using data from the National Child Development Study (NCDS) argues that the arrival of younger siblings has a "deleterious impact" on a child's educational achievements while other scholars (Hotz and Pantano, 2015; Ermisch and Francesconi, 2001; Berglund et al., 2005) have also found that extra siblings reduced educational attainment. Ermisch and Francesconi (2001) have suggested that such findings that children from larger families suffer in terms of educational attainment are as a result of a "scarcity of resources (both money and time)" (p. 151) which the addition of extra siblings bring.

I believe Ermisch and Francesconi's (2001) argument that the pressure on resources that extra siblings bring could also relate to cultural participation. Rather than Blake's (1989) assertion that parents lose enthusiasm as more siblings are born, I believe first-borns cultural advantage may well be to do with money and time. Indeed, Bourdieu (1986, p. 253) stresses that the transmission of cultural capital within the family depends on "usable time (particularly in the form of the mother's free time) available to it". If possible, it would be useful to explore how the number of siblings born and whether the child was a first born interact with economic and time resources in relation to a child's cultural capital accumulation.

Much research has shown that men and women differ in their cultural capital levels with the vast majority suggesting women have higher cultural capital levels than men (DiMaggio, 1982; Katz-Gerro, 2002; Bihagen and Katz-Gerro, 2000; Mohr and DiMaggio, 1995; Dumais, 2002). For instance, Katz-Gerro's (2002) study of highbrow cultural consumption in Italy, Sweden, West Germany, the US and Israel found that women had higher cultural capital levels than men in all these five countries. While the majority of research that has found gender differences in cultural capital has found that women have higher levels than men, research into cultural voraciousness has shown a different relationship where men are more likely to be culturally voracious than women (Katz-Gerro and Sullivan, 2010).

One aspect of cultural participation which I hope to explore in this thesis is the physical availability of these cultural activities. While many studies correctly emphasise the social barriers for many cultural activities, many key studies fail to acknowledge the potential geographical barriers (e.g. Sullivan, 2001; DiMaggio, 1982; Dumais, 2006; De Graaf, 1986). Cultural institutions are more commonly found in urban areas and while organisations such as the National Rural Touring Forum promote bringing cultural performances and exhibitions to more rural areas, I would like to study whether children living in more urban areas are advantaged in their participation in cultural activities.

Habitus

One concept which is crucial to Bourdieu's cultural reproduction theory is that of habitus. Habitus is "one's orientation toward the world" (Dumais, 2006, p. 84) and conduct within it. It covers attitudes, beliefs and dispositions and can be seen through things like a child's manner, vocabulary, and styles of expression (Sullivan, 2007, p. 3). Habitus is acquired by individuals in early life and reflects ones social class. The habitus "forms one's worldview and serves as a guide throughout an individual's life" (Dumais, 2006, p. 85). Understandings over one's life expectations are supposedly formed by the habitus, with higher-class children believing they belong in higher levels of education while the habitus leads lower-class children to believe that higher levels of education are not for them.

Very few quantitative studies on cultural capital have looked at the role of habitus. McClelland (1990) operationalised habitus as occupational expectations and found that those from higher-class families had higher occupational expectations. Dumais (2002; 2006) has also looked at habitus in her research. In her 2002 study on the role of habitus in the relationship between cultural capital and gender, Dumais operationalises habitus in exactly the same way as McClelland (1990) by looking at students' occupational aspirations. She found that habitus had a positive effect on students' reported grades. In Dumais' (2006) study on cultural capital in early childhood, she looked at parental habitus. She operationalised the concept of habitus in this study by looking at parents' expectations for their child's educational success. She found that having parents who expected the child to gain a degree was associated with an increase in the teacher's evaluation of the child.

However, the concept of habitus has been criticised, like a lot of Bourdieu's concepts, for being too vague (Sullivan, 2000; 2007). Even Dumais (2002), who has used this concept several times in her own research, has declared it extremely difficult to represent in quantitative

research, even if one had a large number of variables to represent it. Sullivan (2000, p. 2) has argued that habitus is theoretically incoherent with Bourdieu's theory and deems it of no possible use for future researchers.

Operationalising cultural capital

One key criticism of cultural capital is that it is not well defined. While Bourdieu goes into great detail about the effects of the possession or absence of cultural capital, he is never explicit in what exactly constitutes cultural capital (Sullivan, 2000, p. 19) with the concept changing dramatically over his writings. This has led to Bourdieu's theory of cultural reproduction being "interpreted in various ways" (Sullivan, 2007, p. 1), which has resulted in widely varied definitions and operationalisations of cultural capital in empirical research. Dumais (2006, p. 86) provides a staggering list of different operationalisations of cultural capital in previous studies. This variation has led to many criticising the concept of cultural capital as unclear (Kingston, 2001; Lareau & Weininger, 2003). Kingston (2001) objects to the large number of variables which have been subsumed under the concept of cultural capital in past research. Dumais (2006) argues that unless a more consistent operationalisation of cultural capital is agreed upon, research on the relationship between cultural capital and educational outcomes will remain inconclusive.

One relatively common operationalisation of cultural capital has been splitting cultural capital into two categories: reading; and more formal cultural activities.

Formal cultural activities

De Graaf and De Graaf (2002, p. 170) who have proposed splitting cultural capital into these two components have specifically mentioned museums as an example of a formal cultural activity. Museum visits have historically been involved in many operationalisations of cultural capital (De Graaf, 1986; De Graaf et al., 2000; Bourdieu and Boltanski, 1981; Katsillis and Rubinson, 1990; Roscigno and Ainsworth-Darnell, 1999; Nagel and Ganzeboom, 2002; Nagel, 2010). In the UK, museum attendance is still heavily linked with socio-economic status; despite governments and museums managers attempting to increase accessibility through schemes such as making national museums free, museum attendance remains incredibly middle class in the UK (Bennett et al, 2009, p. 113).

Visiting art galleries is another activity that has long been utilised as a measure of cultural capital. For example, in Bourdieu et al.'s (1991) *The Love of Art* they explores why only a very privileged few visit European art museums while visits to art galleries have been

operationalised as part of cultural capital in a number of key studies (De Graaf et al., 2000; Katsillis and Rubinson, 1990; Sullivan, 2001; Nagel and Ganzeboom, 2002; Dumais, 2002). In Bennett et al's (2009) study, art gallery attendance in modern Britain was shown to be the most exclusive of all the cultural activities they studied. They reported that over half of their respondents did not visit art galleries at all. They believe that the highly-educated middle class and their children are "disproportionately likely to develop a knowledge and appreciation" of visual art (Bennett et al, 2009, p. 131), concluding that visiting art galleries remains a strong way of classifying one's social position.

Two other aspects of this formal cultural activities component of cultural capital which were put forward by De Graaf and De Graaf (2002, p. 170) are theatre and concert attendance. Several key studies have used theatre attendance (De Graaf, 1986; De Graaf et al., 2000; De Graaf and De Graaf, 2002; Bourdieu and Boltanski, 1981; Katsillis and Rubinson, 1990; Sullivan, 2001; Nagel and Ganzeboom, 2002; Nagel, 2010) and concert attendance (DiMaggio, 1982; De Graaf et al., 2000; De Graaf and De Graaf, 2002; Bourdieu and Boltanski, 1981; Sullivan, 2001; Nagel and Ganzeboom, 2002; Dumais, 2002; Nagel, 2010) as a part of cultural capital.

One element of cultural capital which I believe is very difficult to classify in either of the reading and formal cultural activities components of cultural capital is library visits. Much previous research on cultural capital has used library membership or library usage as a key element of cultural capital (De Graaf, 1986; Dumais, 2002; Sullivan, 2001) with Goulding (2008, p. 236) stating that the use of libraries has largely been accepted in the literature as an indicator of cultural capital. However, many of those studies which have split cultural capital into reading vs. formal cultural activities have placed library visits on the side of reading (De Graaf, 1986; Sullivan, 2001). One problem with following these studies' lead is that many of them view libraries as merely places to acquire books. However, this might not be as straightforward as previous studies have suggested, especially when looking in an early childhood context. Many libraries run events and workshops for younger children and while these may very well help foster an appreciation for reading and literature, it seems sensible to acknowledge a difference between reading books and trips to the library. This point has been expanded on further by Goulding (2008, p. 236) who emphasises the changing nature of libraries in recent years in becoming social institutions which is not in keeping with Bourdieu's vision of libraries as "quiet temples of culture".

There is some debate about whether television viewing should be included as a measure of cultural capital. Sullivan (2001) used a measure involving television viewership as part of the cultural capital construct for her study. This particular measure was not concerned with the amount the children watched TV but instead with the types of programmes they watched with Sullivan (2001) categorising TV shows depending on how high-brow she thought they were. In her study she concluded that watching high-brow television shows was significantly associated with their educational attainment, providing evidence that television should be included in measures of cultural capital.

However, Bennett et al (2009) are far more sceptical about whether television viewing should be a part of cultural capital. They argue that in contemporary Britain, television viewing should almost be viewed as a negative asset in cultural capital; the frequency of television viewership is inversely related to those who are usually highest in cultural capital. TV viewing has little correlation with social class, unlike other cultural activities Bennett et al (2009) studied. It is amongst the most widely practised and shared of the cultural activities the authors studied. They explain this fact by stating that television has an absence of exclusivity, isn't expensive or socially uncomfortable, and has no institutional guardians (Bennett et al, 2009, p. 150).

The crucial difference between Sullivan's (2001) and Bennett et al.'s (2009) studies is the way they frame television viewing. Sullivan (2001) focuses exclusively on the types of shows watched, suggesting that not all television shows are high in cultural capital, while Bennett et al (2009) concentrate more specifically on the act of television viewing. However, both of these views can mesh with one another. In terms of using television viewing in cultural capital research it seems that if you have access to data on the types of shows watched then it would make sense to look at this potential aspect of cultural capital; however, if you only have data on television viewing in general then the evidence from Bennett et al (2009) would suggest excluding television viewing from any potential measure of cultural capital.

Similarly to television viewing, there is some debate over whether or not cinema going should be thought of as an element of cultural capital. Chan and Goldthorpe (2005) looked at cultural omnivorousness and found a distinction between cultural omnivores and cultural univores; cultural omnivores had high rates of attendance at all cultural events whilst the cultural univore tended to only go to the cinema. They claimed that cultural omnivores had higher social status, higher education and higher income than the cultural univores. Bennett et al (2009) believe cinema going is widely practised, non-exclusive, and correlates weakly with social class. They

believe that it contributes "less to the accumulation of cultural capital" (Bennett et al, 2009, p. 151) than reading, music or visual art and shouldn't be seen as signifying cultural capital in modern Britain.

Reading

One hugely researched area of cultural capital is the activity of reading. Bennett et al. (2009) stress that reading should be seen as a key element of cultural capital in modern Britain. They believe that reading is a "crucial avenue" (Bennett et al, 2009, p. 112) for the accumulation of cultural capital. In household interviews and focus groups, respondents made it clear that reading as a cultural activity has distinctive qualities which stem from its relationship to education (Bennett et al, 2009, p. 95). However, while the importance of reading is widely acknowledged by respondents in Bennett et al.'s (2009) study, they find evidence that the activity of book reading "is still overwhelmingly populated by the educated middle class" (p. 106).

While Bourdieu (1984, p. 116) stated that those higher in cultural capital tend to prefer the "rarer types of reading", other researchers have argued against this. For instance, De Graaf and De Graaf (2002) and Bennett et al (2009) believe that rather than genres of books being important for cultural capital, it is instead the act of reading books itself which is important for cultural capital. It is therefore more important that my study has a measure on the frequency of a child's reading rather than the types of books being read.

The reading component of cultural capital is something which lends itself very well to early childhood. In the film *La sociologie est un sport de combat* (2001), Bourdieu explicitly mentions children being read to by their parents as an element of cultural capital. In Clark and Rumbold's (2006, p. 9) literature review on reading for pleasure they identify six key areas which reading in childhood is beneficial for: reading attainment and writing ability; text comprehension and grammar; breadth of vocabulary; positive reading attitudes; greater self-confidence as a reader; and pleasure in reading in later life. An OECD (2002) report provided evidence that reading habits had a greater impact on educational attainment than socio-economic status. Research has also shown that reading for pleasure has been associated with a wide range of different non-educational benefits, including: a sense of community, feelings of social inclusion, ability to enjoy social occasions (Billington, 2015), social ability and empathy (Mar et al, 2009).

However, while there is extensive evidence of an association between reading frequency and educational attainment, there has been a difficulty in establishing the causality of this relationship without appropriate longitudinal evidence (Sullivan and Brown, 2015). Sullivan and Brown's (2015) study using British Cohort Study (1970) data hoped to clarify the nature of this relationship: does reading promote skills and abilities in children or do children with these skills and abilities read more? Sullivan and Brown (2015) showed that the home reading culture, which included how often the parents read to the child and also how often the parents themselves read, was associated with children's later test results. This home reading culture mediated the influence of parental education on test scores and also had a slight impact on mediating the role of parental social class (Sullivan and Brown, 2015, p. 16). They also found that children's own reading behaviour was strongly linked with vocabulary and mathematics test scores. We can see from Figure 1 below that the disparities in vocabulary ability between high frequency readers and low frequency readers widens greatly between age five and age sixteen. At age five, there is a difference of just over ten percentage points between high readers and low readers in vocabulary ability. By age sixteen, this gap in vocabulary ability scores has risen to over thirty percentage points.

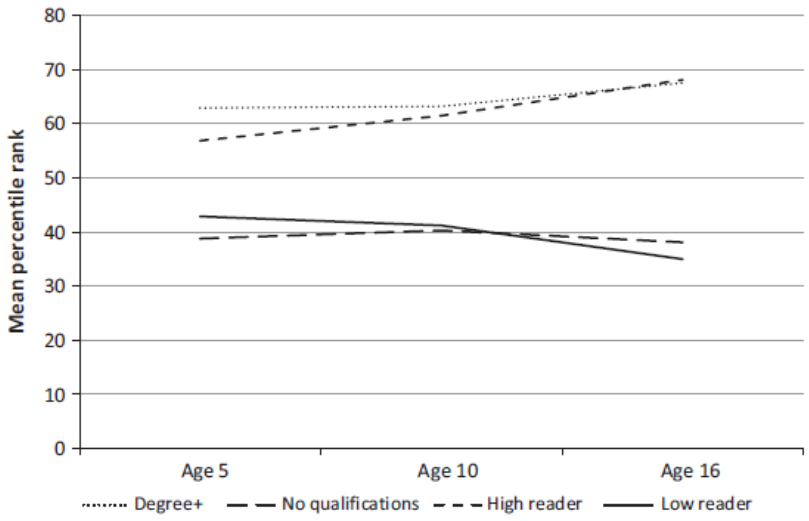


Figure 1. Vocabulary trajectories
Notes: n = 3,583, data imputed where missing. Age 5: English picture vocabulary; Age 10: The vocabulary subscale of the pictorial language score; Age 16: Vocabulary score.

Figure 1. Taken from Sullivan and Brown (2015, p. 980).

Sullivan and Brown (2015) also controlled for the child's test scores at age five and ten and found that the influence of the child's own reading behaviour was still large and significant. They concluded that this suggested that the link between reading and educational outcomes

was not as a result of more able children being likely to read a lot but instead that reading for pleasure is an important mechanism for the "increased development of cognitive skills" (Sullivan and Brown, 2015, p. 16). Sullivan and Brown's (2015) results lend a lot of support to the information-processing theory. Here, reading – an often crucial element of cultural capital – was shown to be developing key skills which will be rewarded in the educational system.

Sullivan and Brown's (2015) conclude from their study that promoting reading to disadvantaged children could be a key way to reduce social inequalities. The Department for Education's (2012) review on reading for pleasure highlights three crucial factors which are necessary for any programme or intervention targeting the promotion of reading for pleasure: ensuring adequate access to books; parents taking a proactive role in encouraging reading; and teachers providing guidance and encouragement.

Interestingly, the number of books in a household has often been viewed as a sign of 'objectified' cultural capital (Bourdieu, 1986; Georg, 2004). One can understand how the number of books in the household could be seen as a source of cultural capital under the status-seeking theory, where a large collection of books could signify cultural status. However, following the information-processing theory, it becomes more difficult to view the number of books as a measure of cultural capital. Books left on a bookshelf cannot, as far as we are aware, develop skills within a child. Rather, what is surely important is that these books are looked at and read which as we know will in turn develop a child's cognitive skills (Sullivan and Brown, 2015). Under the information-processing theory, therefore, I believe books should be seen as a cultural resource which can be translated into educational benefits but only if they promote the child's reading. This follows Lareau's (1987, p. 4) assertion that cultural resources "must be invested or activated to become a form of cultural capital". Following this, any educational effects the number of books in a household had would be mediated by a child's cultural capital, specifically the reading component.

There have been a number of schemes set up to promote the value of reading with young children. The Chatterbooks programme, which is the UK's largest network of children's reading groups, has been running since 2001. A Reading Agency (2003) evaluation of this programme found reported improvements in confidence, self-esteem, self-expression, and listening skills in children who had taken part. Book Trust has done a great deal of work in promoting reading for early years' children and their parents through programmes and

interventions (Wilkinson, 2015, p. 18). Their Bookstart programme provides a free pack with books and resources to parents of children age 0-12 months and then another free pack when the child is age 3-4 years. A longitudinal follow-up study on the impact of the Bookstart programme indicated that participants showed substantial gains in mathematics as well as literacy (Wade and Moore, 2000).

The Early Words Together programme is a targeted intervention in the UK which aims to "develop young children's communication, language and literacy and to enable family engagement through the support of peer volunteers." (Wood et al, 2015, p. 3) One of the aims of this intervention is to help parents understand that they are important in their child's reading development. A recent evaluation of this programme found that it provided significant improvements in children's enjoyments of sharing books as well as helping parents' confidence in sharing books with their children (Wood et al, 2015).

One policy in Scotland which has attempted to encourage reading in the early years is the Bookbug programme. This programme gives bags containing books and other resources to "every baby, toddler, three and five-year-old in Scotland" as well as providing free sessions in libraries and community settings which encourage parents and children to read together (Davidson et al., 2017, p. i). In 2016-2017, approximately 180,000 book bags were gifted to children across Scotland while 23,670 sessions were delivered. Evaluations of the Bookbug programme have found that it is "high quality, understandable, transferable into different local settings, and hugely respected by those involved" while parents and professionals have regarded it as having "positive impacts" (Davidson et al., 2017, p. vi).

There is some loose evidence from Bennett et al's (2009) study that these schemes are having some sort of effect. The authors showed that several interviewees who were not 'readers' themselves stressed the importance of reading to their children to try to "cultivate what are widely assumed to be essential skills of literacy" (Bennett et al, 2009, p. 95). We might see this as an example of parents potentially low in cultural capital providing their children with cultural capital – a clear avenue through which the cultural mobility model can work.

Early childhood

Inequalities in early childhood

Given how the early years are so crucial in terms of development, inequalities in this period are linked strongly to inequalities later in life. Many studies have shown that children who come from more disadvantaged backgrounds – typically defined by low parental education, low household income, and low socio-economic status – are much more likely to suffer in developmental outcomes than more advantaged children. A very influential study by Heckman and Carneiro (2003) showed that in the US there was a clear association between the family income level of children and their cognitive ability at a very early age, with those financially disadvantaged children scoring significantly lower on ability tests than their more advantaged counterparts. Many of these inequalities are present before most children even start a form of pre-school education. Liaw and Brooks-Gunn (1994) showed that factors relating to poverty could influence the IQ levels of children as young as three. Klebanov et al.'s (1998) study provided similar findings, showing poverty affecting children's ability by the age of two.

A number of studies looking at early childhood inequalities are from the UK (e.g. Bradshaw and Tipping, 2010; Bromley, 2009; Bradshaw, 2011; Feinstein, 2003). These studies find similarly vast inequalities, illustrating the importance of this issue in the UK. Studies using data from Growing Up in Scotland (GUS) have shown that by the age of three, there are stark inequalities for children in Scotland across a range of circumstances (Bradshaw and Tipping, 2010; Bromley, 2009; Bradshaw, 2011). The studies by Bromley (2009) and Bradshaw (2011) showed that for household income, level of education, and socio-economic classification, children in the more advantaged circumstances had on average higher cognitive ability scores at age three and at age five than the more disadvantaged children. Cognitive ability was measured here by vocabulary and picture similarities scores.

Leon Feinstein (2003) used data from the 1970 British Cohort Study to find significant cognitive differences in children from different socioeconomic groups at the age of 22 months. Blanden and Machin's (2010) study using data from the Millennium Cohort Study also showed large inequalities in vocabulary scores at ages three and five according to family background. Sylva et al (2004) found, using data from the EPPE study, that there are large attainment differences in reading and maths scores which are related to the socio-economic status of the child's family.

Evidence also seems to show that these inequalities widen between the ages of three and five (Dearden et al., 2011; Bromley, 2009; Bradshaw, 2011; Feinstein, 2003). Dearden et al. (2011) have shown that there are large differences in cognitive and social and emotional development between children from rich and poor backgrounds which are present by the age of three and widen even further by the time the child reaches five. Studies using the GUS data (Bromley, 2009; Bradshaw, 2011) showed inequalities widening in vocabulary ability between the ages of three and five according to level of parental education. Studies such as these have led to a "general consensus that the really important mechanisms of social inheritance lie buried in the pre-school ages" (Esping-Andersen, 2009, p. 121).

Feinstein's (2003) study had one especially interesting finding that seems to give great weight to the power of social class inequalities in early childhood. Feinstein looked at children who were in the top and bottom quartile for a combined measure of test results at age 22 months. He split these into those who were high in social-economic status (SES) and those who were low in SES. He found that by age 10, those children who were top quartile performers in the tests but in the low social class had been overtaken by the bottom quartile group in the highest social class. This powerful finding is illustrated in Figure 2 below, taken from Feinstein's (2003) paper (colour has been added for this thesis for effect).

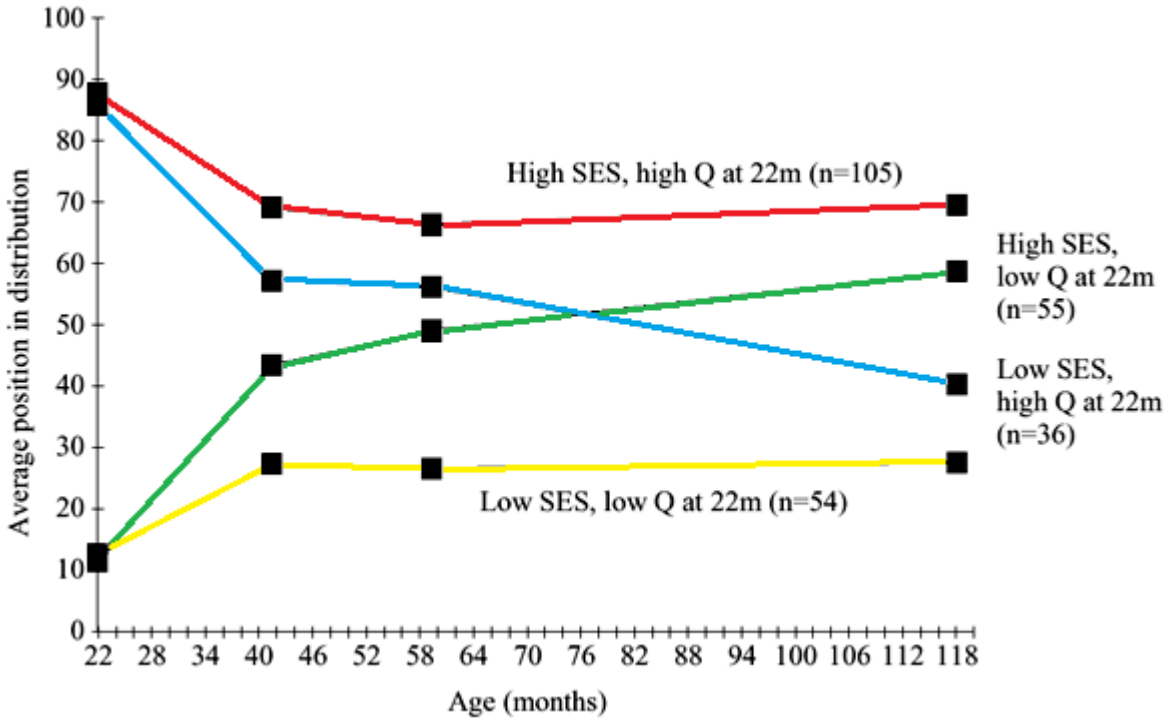


Figure 2. Taken from Feinstein (2003, p. 85). Average rank of test scores at 22, 42, 60 and 120 months, by SES of parents and early rank position. Colours added here for effect.

A similar finding to that of Feinstein's (2003) was found by Schoon and Parsons (2002). Using data from the National Child Development Study (NCDS) and the 1970 British Cohort Study (BCS) they compared the outcomes of four groups of children: advantaged high-achievers – high SES with above average cognitive and behavioural abilities; advantaged underachievers – those from high SES but with abilities below average; resilient children – disadvantaged high achievers; and vulnerable children – disadvantaged underachievers. Schoon and Parsons (2002) find that although resilient children initially demonstrated better than average cognitive and social skills, their adult life outcomes were worse than those of the advantaged underachievers. In the British Cohort Study, 9% of resilient men and 3% of resilient women got a degree whereas amongst the advantaged underachievers 23% of men and 22% of women got a degree. Both Feinstein (2003) and Schoon & Parsons (2002) demonstrate that while ability scores in early childhood have a significant association with outcomes later in life, a child's future prospects are by no means set in stone before they reach school age. Both studies also show that class inequalities continue to have an effect on life outcomes well past the age of five.

There is also strong evidence of gender differences in educational ability in early childhood with the majority of evidence showing girls significantly outperforming boys on a range of educational measures (Galsworthy et al., 2000; Westerlund and Lagerberg, 2008; Berglund et al., 2005). These gender differences have been found in the UK for children as young as 9 months old (Dex and Joshi, 2004) and have been found to be present at entry to pre-school (Sylva et al., 2004).

Parenting and home learning environment

While class inequalities are well evidenced in early childhood, there is less certainty over what may cause them. One element which has been touted is the role of parenting. Neuroscientists concerned with child development regard it almost as fact "that parenting affects children's brain development in lasting ways" (Hughes and Baylin, 2012, p. 4). We also know that certain parenting practices are associated with better developmental outcomes (Bradley and Corwyn, 2002). Several studies (Gutman and Feinstein, 2007; Lareau, 2002) have shown that parenting practices differ greatly based upon social class and education level.

Esping-Andersen (2009) believes there are three main parental mechanisms which influence child development in these early years: (i) money; (ii) time investment; and (iii) learning culture. All three of these factors are unequally distributed according to the social class of the

parents. The financial resources available to parents are the most visible in terms of unequal distribution. Erikson and Jonsson's (1996) international study concluded that one of the reasons why Scandinavian countries have had success in reducing social reproduction is due to their successes in curbing child poverty. Heckman (2006) argues that while the financial resources available to parents are an important source of educational outcomes, they are secondary to the levels of "cognitive and noncognitive stimulation given to young children" (p. 1900). This refers to the inequalities in time investment and the learning culture of parents.

In terms of time investment, data shows that total parenting time has risen since the 1960s, owing largely to the increase in fathers' participation (Esping-Andersen, 2009, p. 126). However, these increases have not occurred equally across social classes. It is primarily among the highly educated where this increase is seen, with highly-educated fathers' investment almost tripling in the last few decades in the UK (Hook, 2006). It is not just the amount of time that highly-educated parents invest in their children which is unequal, but also the type of investment. Bonke and Esping-Andersen (2009) have shown that highly educated parents spend on average 20% more time on developmental activities than those with less education.

Esping-Andersen (2009) believes higher-class families can offer better quality parental investment to their children. He believes this is related to the cultural capital of the family (Esping-Andersen, 2009, p. 127). One difficulty when exploring the role of children's and parental cultural capital in early childhood is that they tend to cross-over with another key concept, a child's home learning environment. The home learning environment describes a range of learning related provision in the home which includes "reading, library visits, playing with letters and numbers, painting and drawing, teaching (through play) the letters of the alphabet, playing with numbers and shapes, teaching nursery rhymes and singing" (Desforges and Abouchaar, 2003, p. 23).

A great deal of research focusing on the home learning environment has come from Sylva et al.'s (2004) Effective Provision of Pre-school Education (EPPE) study. Together with other background factors such as parents' education and socio-economic status, they showed that home learning environment exerted an independent influence on educational attainment. Home learning environment was shown to be positively associated with the family's social class and the parents' educational level. Sylva et al.'s (2004) study showed that the home learning environment had a very powerful developmental effect on three and four year olds, especially on cognitive development. The effects of the home learning environment on educational

outcomes were stronger than those of any other factor, including social class and parental education level. These effects of the home learning environment were still present at age eleven (Sylva et al., 2008).

There is some evidence that policy can help combat inequalities in a child's home learning environment. Research from the US has shown that the Early Head Start program which provided a combination of centre-based childcare and home visits for disadvantaged children from birth to age three was successful in this regard. The intervention increased the quantity and quality of the parents' interactions with their children as well as children's social and cognitive development (Love et al., 2005), suggesting that "parenting behaviours are learnable, and changes in parenting are associated with improved child development." (Johnson & Kossykh, 2008, p. 14). In the UK, efforts have been made to put an emphasis on a child's home learning environment. The Department for Children, Schools and Families (DCSF), which has since been subsumed into other departments, rolled out a number of programmes and pilot schemes, both targeted and universal, such as Parent Support Advisors and Family Pathfinders, to try to promote the importance of a good home learning environment.

Esping-Andersen (2009) argues that the best way to overcome the social inequalities surrounding cultural capital and the home learning environment in the early years is to invest in high-quality pre-school education. These early educational facilities will supposedly provide the cognitive and noncognitive stimuli that might be lacking in children from families with low cultural capital. He supports this view with evidence from the PISA data. Given Nordic countries' relative superiority in terms of universal childcare coverage, Esping-Andersen (2009) hypothesises that if universal childcare were to compensate for unequal cultural capital, then cultural capital's explanatory power "would be systematically weaker in the Nordic countries than elsewhere" (p. 136). This is what he finds, with the influence of parents' cultural capital in Scandinavian countries lower than anywhere else. In a between cohort comparison of Nordic countries he also shows that, for the generation who went through these childcare changes, coming from educated parents is now far less important than for previous generations in determining whether or not they would finish upper secondary education.

However, unfortunately Esping-Andersen's (2009) analyses are rather simplistic, attributing all of its results to universal childcare without even having a childcare variable and also lacking sufficient background variables on any other potential differences between Scandinavian countries and other countries. His between-cohort comparison similarly neglects to mention

any other potential differences between the cohorts. There is however other evidence to suggest that Esping-Andersen's (2009) assertion that high quality child care and pre-school could counter the inequalities in children's home learning environment. In the Effective Provision of Pre-school Education (EPPE) study, while there was little evidence of differential effects of pre-school according to the social class of the parent, those children with poor home learning environments showed a benefit to attending pre-school, particularly high quality settings (Sylva et al., 2011). It would therefore be very useful in my thesis to look at how childcare affects parental cultural capital's link to cultural capital.

Childcare

Some of the most well-established studies on early education's benefits in the UK are the Effective Provision of Pre-school Education (EPPE) study and the Effective Pre-school, Primary and Secondary Education (EPPSE) project. The EPPSE project found that early education was a key determinant of cognitive and social development at the age of seven (Sylva et al, 2004) and that these impacts were sustained even at ages ten and eleven (Sylva et al, 2008). A Scottish study using Growing Up in Scotland data (Bradshaw and Wasoff, 2009) found that weekly duration of non-parental care was positively associated with vocabulary ability. Similarly, research from Butt et al. (2007) has shown that duration of care, measured here in months and years rather than weekly, is positively associated with child outcomes. In his review of 32 studies on the relationship between early education and care and cognitive development, Burger (2010) found that for 22 of the studies there was a significant positive association between pre-school attendance and cognitive and educational outcomes. He also found that for most of these studies these effects were persistent during the subsequent school years (Burger, 2010, p. 160).

However, due to the nature of childcare in the UK, simply using a measure of whether someone used childcare or not is a problematic way to look at the effects of pre-school education. Around 96% of four year olds and 93% of three year olds in the UK use some of their free entitlement to early education and childcare (Department for Education, 2017). The near-universal character of early education in the United Kingdom at present means that comparing between those who have and haven't had some experience becomes much more difficult. Given the huge expansion of pre-school education and childcare mentioned above, most current research tends to look at how certain characteristics of different childcare settings are associated with

child development outcomes rather than looking at whether a child attended a form of childcare or not or the duration of care.

The EPPE project found that the key factor associated with the greatest cognitive development of children was the quality of the pre-school provision (Sylva et al, 2011). As part of the same project, Melhuish et al (2008) found that children who attended high quality early education provision achieved higher numeracy and literacy levels than those in lower quality settings or those who had no experience of pre-school at all. The same relationship between childcare quality and developmental outcomes has also been observed in the US (Belsky et al, 2007). Evidence suggests that one of the main aspects in determining the quality of childcare and early education settings is the qualifications of the staff members. Recent research by Education Scotland (2012) has shown that the qualifications of pre-school staff were positively associated with high quality learning experiences for children. The EPPE study also found evidence for this: settings where staff had higher qualifications were associated with higher quality provision and improved child outcomes (Sylva et al, 2004).

One excellent study which looks at childcare and early education quality is *Growing Up in Scotland: characteristics of pre-school provision and their association with child outcomes* (2014) by Bradshaw, Lewis and Hughes. This study uses data from Growing Up in Scotland and combines it with administrative data from the Care Inspectorate and Education Scotland in order to look at how certain characteristics of pre-school provision are associated with child outcomes. When members of the birth cohort were four years old their parents were asked to provide the name and address of any pre-school providers which the child was attending. This was then linked where possible to administrative data held by both the Care Inspectorate and Education Scotland which measured the quality of pre-school settings. This allowed Bradshaw et al. (2014) to explore how particular aspects of the quality of pre-school settings influenced developmental outcomes in a later sweep of the data. They found that, after controlling for children's background characteristics and vocabulary ability at age three, the pre-school provider's grade for care and support was significantly associated with children's vocabulary ability at age five. Hence, those children attending providers with a higher grade for care and support were "more likely to show higher vocabulary skills by age five, irrespective of their skills at age three and their social characteristics" (p. 58). However, this was the only statistically significant association that was seen between different characteristics of pre-school provision and child outcomes. Using an interaction term, the study examined whether this relationship was stronger for children from different levels of parental education; however, the

interaction was not significant suggesting that this association between quality of care and support and vocabulary is similar for children from parents with different education levels.

It has been thought that high quality childcare could help reduce the high levels of inequality seen in early childhood. Indeed, there is a large body of evidence that shows that disadvantaged children are especially likely to benefit from high quality pre-school provision (Currie, 2001; Melhuish et al., 2008; Sylva et al, 2004, 2008; Mathers et al, 2007) with much of this research looking at the UK. Using the National Child Development Study, Feinstein et al (1999) showed that while children from disadvantaged backgrounds in the UK did not gain any more in absolute terms than their more advantaged counterparts from pre-school education, their improvements in relative terms far outweighed those of children from advantaged backgrounds. That is, disadvantaged children did not gain more than their advantaged counterparts in terms of the unit of the outcome measure but they gained more as a percentage.

Much of the current evidence on how high quality pre-school affects children from disadvantaged backgrounds is from studies which look at targeted interventions, mostly from the US. The most famous example is the High/Scope Perry Preschool which started in 1962 with the aim of providing high-quality early education to disadvantaged African-American children. Children attended daily classes and had a weekly home visit from a teacher. Berrueta-Clement et al.'s (1984) study compared children who had been to the Perry programme with children who had stayed at home. They showed that the Perry Preschool graduates compared to the control group had by age 27: significantly higher earnings; significantly higher percentage of home ownership; significantly higher level of schooling completed; and significantly fewer arrests. Schweinhart et al.'s (2005) follow up of the Perry Preschool graduates at age 40 showed similar results with the graduates having higher salaries, fewer arrests and several other positive life outcomes.

Many scholars (eg., Jenson & Saint-Martin, 2006) have attributed developments in child care services to the restructuring of welfare states towards a social investment perspective. According to Morgan (2012, p. 165), the United Kingdom's recent developments in early education and childcare can be seen as evidence of a shift towards an embrace of the social investment approach, with Sure Start the "centrepiece" of this approach. The social investment perspective puts an emphasis on policies that 'prepare' rather than 'repair' (Morel, Palier, & Palme, 2012, p. 1) emphasizing the need for policies that "invest in human capital development (...) and that help to make use of human capital" (p. 2). This drive towards creating and

harnessing human capital is linked to the move towards knowledge-based economies, where "knowledge is considered as the driver of productivity and economic growth" (Morel, Palier, & Palme, 2012, p. 1). In these knowledge-based economies there are "rapidly rising skill requirements" (Esping-Andersen, 2009, p. 114), which can be fulfilled through increasing human capital.

Contrary to neoliberal views, the social investment approach sees social policies as productive: "essential to economic development and to employment growth" (Morel, Palier, & Palme, 2012, p. 2). The ideas behind the social investment approach go back as far as the Myrdals, who in the 1930s "viewed social policy as an investment rather than a cost" (Morel, Palier, & Palme, 2012, p. 3). Investment in early education is strongly linked to the social investment perspective as it supposedly activates female human capital through mothers' employment as well as "shaping the nation's future labour force" (Morgan, 2012, p. 155) by investing in the human capital of children.

Neuroscientific research on early childhood

Between birth and adulthood the volume of the brain nearly quadruples; however, this is not to do with the production of new neurons but instead because of the expansion of connections (Howard-Jones, 2007, p. 3). Within three months of conception, the majority of neurons we have as adults are already in place with only the hippocampus and the cerebellum producing neurons after birth (Howard-Jones, 2010, p. 4). Brain development is "particularly dramatic" (Blakemore & Frith, 2005, p. 18) during the first year of life, when there is a huge development of connections in the brain (Howard-Jones, 2010, p. 4), to the extent that "the number of connections in a baby's brain greatly exceeds adult levels" (Blakemore & Frith, 2005, p. 18). However, these connections are eventually cut back through a process known as synaptic pruning which occurs at different times in different regions of the brain (Howard-Jones, 2010, p. 4).

Neuroscientists have been keen to set straight the 'myth of three' (Howard-Jones, 2014) – that is, the myth that the majority of brain development occurs between zero to three years and that "the trajectory of human development is chiefly fixed" (Howard-Jones, 2014, p. 3) after this period. This is supposedly an oversimplification that has led to misunderstandings by educators and policy researchers (Howard-Jones, 2014). For instance, these increased periods of connections being made (synaptogenesis) and then cut back (synaptic pruning) in early childhood were used by Rakic (1995) to suggest that the most efficient time for learning was

during the first three years of life. This research has been cited as one of the main reasons why neuroscience has been seen as supporting the idea that education should begin as early as possible (Howard-Jones, 2010). However, Blakemore and Frith (2005, p. 35) believe there is little neurological evidence to support the idea of 'hothousing' during children's earliest years. This is a belief that is shared by many neuroscientists and it has since been shown that synaptogenesis and synaptic pruning continue well beyond the first three years, especially in brain regions related to higher-level processing where synaptic pruning does not occur until after puberty (Howard-Jones, 2010).

Another reason why many have believed that neuroscience backs starting education as early as possible is because of research on critical periods. These were thought of as a "window in time when a child can learn a particular skill or ability" (Howard-Jones, 2010, p. 26). This was fuelled by studies such as Kuhl et al.'s (1992) which demonstrated that humans have an inability to distinguish new speech sounds if they aren't introduced to them before 6 months of age. However, this has since been shown to be one of the few pieces of research to support a critical period. Instead, the majority of neuroscientists now believe that critical periods "are not rigid and inflexible" (Blakemore & Frith, 2005, p. 26), and instead advocate the use of the term 'sensitive period' instead (Thomas & Johnson, 2008). While knowledge on sensitive periods is fairly limited, it has been shown that even in cases where children are denied the required sensory stimulation during a sensitive period, training at a later age can still result in a degree of recovery in the corresponding brain area (Blakemore & Frith, 2005, p. 26). The increased periods of synaptogenesis and synaptic pruning mentioned earlier have been postulated as explaining sensitive periods (Howard-Jones, 2010, p. 5).

An additional reason why neuroscience was seen as supporting starting education as early as possible was due to research on the effects of enriched environments on learning. This comes from classic studies on rats such as Diamond et al. (1987) and Greenough et al. (1987). In these studies typical laboratory rats were compared with rats who had grown up in a more enriched environment with toys and other rats. The results showed that the rats living in the more enriched environments had brains which weighed more than the laboratory rats. This was seen as evidence for providing children with enriched environments, full of sensory stimulation, as early as possible. However, the argument that this shows the benefits of an enriched environment has since been questioned, stating that the enriched environment was no more enriched than the rat's natural habitat, with even Greenough et al. (1987) at the time stating that it was enriched "only in comparison to the humdrum life of the typical laboratory animal"

(p. 546). Neuroscientists now believe this research shows more about the effects of deprived environments than enriched ones. However, Michael Rutter's research on children who had been adopted from very deprived orphanages in Romania found that most children made a full recovery which Blakemore and Frith (2005) believe demonstrates that "even very deprived babies can recover to a large extent if given remedial stimulation and care" (p. 35).

This should not be viewed as neuroscience dismissing the importance of early education. Bailey Jr. (2002) has argued that the promotion of early education is very important but it should not be based on this incorrect idea of a critical period, instead it should be promoted as it provides the foundation for future learning. Lombroso and Pruett (2002) have argued that while the term critical period is inaccurate, there are some experiences which the brain will respond to with more ease during early childhood.

I believe that neuroscientific research can also help provide real evidence for the basis of the information-processing theory. There is plenty of evidence that the brain's "structure and connectivity can change with experience" (Howard-Jones, 2010, p. 3). An example of a study showing the effects of experience on the brain is the commonly cited Maguire et al. (2000) study of London taxi drivers which showed their region of the brain responsible for spatial representation and navigation (hippocampus) had enlarged formations. This gives us an example of the routes through which cultural experiences might actually have cognitive benefits.

One aspect of cultural capital which has been commonly studied by neuroscientists is reading. Research has shown that reading in adults involves a network of language regions in the left hemisphere of the brain (Fiez and Peterson, 1998). Reading can be thought of as an experience-dependent development, with studies (Carreiras et al., 2009; Petersson & Reis, 2006) showing how illiterate adults who were taught to read showed increases in gray matter and white matter in the regions of the brain known to be linked to reading; these changes in brain structure were viewed as a direct result of learning to read. Studies have shown that the actual organization of the brain differs between literate and illiterate adults (Castro-Caldas et al., 1998). We can see from this evidence that the activity of reading actually makes a cognitive difference in individuals which I believe suggests that there is plenty of support to the information-processing theory's claim that cultural activities can activities have real cognitive benefits.

Another example of cultural activities influencing cognitive development is participation in musical activities. The media have commonly linked music to brain development with the

obvious example being playing classical music to unborn or newly born babies. There is little evidence on the neurological benefits of listening to different forms of music (Howard-Jones, 2010); however, there is some neuroscience research to suggest there are benefits to musical participation. An fMRI study showed that skilled adult pianists have enlarged connections in the auditory cortex which were linked to the age at which the musician began to practice (Pantev et al., 1998). A similar study showed that skilled violinists had enlarged neural representations for their left fingers (Elbert et al., 1995), which again was dependent on the age at which musical training began. These studies clearly show how specific musical experiences can affect brain development and also hint that early exposure to musical training can be very beneficial. Neuroscientific research has begun to look at this early exposure to musical participation. A study by Hyde et al. (2009) gave a group of six-year-olds 15 months of weekly keyboard lessons, while a control group spent an equivalent amount of time in school music activities. After this period of lessons, the keyboard group had greater brain size in motor areas, the corpus callosum, and the auditory region. Another study (Moreno et al., 2009) showed that eight-year-olds who were trained in music showed higher efficiency in neural networks in both reading and speech discrimination tasks. I believe this provides a fascinating insight into how cultural activities might help develop cognitive skills, which the information-processing theory suggests is how cultural capital has an educational benefit.

3. Methods

Research Questions

My study will try to answer the following research questions:

- Is parental cultural capital associated with children's cultural capital?
- What factors other than parental cultural capital are associated with a child's cultural capital levels in early childhood?
- Does cultural capital in early childhood have an educational effect?
- Is cultural capital a source of educational inequality in early childhood?
- Does cultural capital follow the cultural mobility model in early childhood?
- Is the reading component of cultural capital the only educationally beneficial component in early childhood?
- How does the accumulation of cultural capital change over time?
- Does any educational effect cultural capital has change over time?

Data

To answer these research questions, this thesis will use data from Growing Up in Scotland (GUS), a large-scale longitudinal research study funded by the Scottish Government aimed at tracking the lives of Scottish children through childhood. Launched in 2005, the research is carried out by ScotCen Social Research in collaboration with the Centre for Research on Families and Relationships (CRFR) at the University of Edinburgh and the MRC Social and Public Health Sciences Unit at Glasgow University. Using a longitudinal birth cohort study "offers numerous benefits" (Caruana et al., 2015, p. 538) including being able to establish the sequence of events and being able to track change over time in the same set of individuals (Caruana et al., 2015)

There are three different cohorts of children who have been followed by Growing Up in Scotland: two birth-cohorts and one child cohort. The child cohort was followed from the age of three while both birth cohorts were followed from the age of ten months. This study will use data from the first birth cohort. This is the only cohort which has two sweeps of data looking at cultural activities which is crucial for my study. This birth cohort is a sample of children

born between June 2004 and May 2005. Data was collected annually between when the child was aged ten months up to when the child was just under six years old. Data has then been collected every two years with the most recent sweep of data currently being conducted at age 12. For each sweep, interviews took place around six weeks before the child's next birthday; in the first year of the study, children were 10 months old, in the second year they were 22 months, etc. For presentation purposes, I will refer to children as the age they are six weeks away from in future. Below in Table 1 you can see what year the sweeps of data for the birth cohort were collected and the age that the children are in each sweep.

Table 1. Description of how child's age, sweep number and year relate.

Child's age	Birth cohort 1	Sweep number
10 months	2005/06	1
Age 2	2006/07	2
Age 3	2007/08	3
Age 4	2008/09	4
Age 5	2009/10	5
Age 6	2010/11	6
Age 8	2012/13	7
Age 10	2014/15	8
Age 12	2017/18	9

The sample was drawn using Data Zones, small geographical areas created for the Scottish Government (Bradshaw et al., 2007). These data zones contain between 500 and 1,000 residents. These data zones were aggregated to give an average of 57 births per area a year (Bradshaw et al., 2007, p. 2) which would provide the appropriate sample. These aggregated areas were then sorted by Local Authority and Scottish Index of Multiple Deprivation score before 130 areas were selected at random. Within each area, Child Benefit records were used to identify all babies who met the birth criteria (see Table 1.2 in Bradshaw et al., 2007, p. 3). In cases where there was more than one child who met the criteria in a household, one child was selected at random. Several exclusions were then made by the Department for Work and Pensions (DWP) for cases they considered 'sensitive' or for children that had been sampled for research by DWP recently (Bradshaw et al., 2007, p.5). Families then received a letter inviting them to take part in the study where participation is entirely voluntary.

Being able to utilise a birth cohort study for my research is a huge positive as it allows me to look at the effects of cultural capital over time within the same group of children. The fact that data is available yearly from when the children are aged ten months to six years old is a huge benefit for this study, given that I have already stated how much of a period of great change the early years are.

Attrition and Missing Data

One key issue with longitudinal data is the problem of attrition. Attrition occurs when respondents drop out of the study over time. This can result in smaller sample sizes but more worryingly can lead to a biased sample (Mostafa, 2014). This sample bias results from the fact that attrition is often not random; certain groups of people are more likely to drop out of studies. For instance, analysis of GUS data found that attrition was higher among more disadvantaged families (Parkes, Sweeting & Wight, 2014). This thesis used longitudinal weights designed by Growing Up in Scotland to help counteract the fact that attrition is not random and to help "make it more likely that the findings are generalisable to the Scottish population as a whole." (Parkes, Sweeting & Wight, 2014, p. 12). These survey weights also take into account elements of GUS's complex sampling – stratification and clustering.

As well as the issue of attrition for missing data, item non-response is also something my research has to be aware of. Item non-response refers to missing values within respondents' answers to the survey. These missing values are most problematic if they are dependent on any other variables within the model or they are dependent on the measure themselves – for instance, if those who were in the lowest social class were the most likely to not state their social class.

This study used complete case analysis to deal with missing data. This means that those individuals who had any missing responses to those variables included in the particular analysis were excluded from that analysis. One obvious issue with complete case analysis is that it reduces the sample size of the analysis which can result in a loss of statistical power (Allison, 1999, p. 72). More worrying is the issue of whether the item non-response was random or whether certain groups of individuals were more likely to not answer a particular question. Using complete case analysis when data is not missing at random can result in biased estimates (Allison, 1999) which this study must be aware of. One potential way this study could have dealt better with missing values would be through the use of multiple imputation.

Variables

Cultural Capital

Bourdieu (2003, p. 71) refers to cultural capital as "cultural competence" and "familiarity with the dominant culture". It is this familiarity and knowledge of the dominant culture which results from participation in these cultural activities which we view as cultural capital rather than simply the participation itself. However, without a bespoke dataset it is very difficult to capture these elements of cultural capital fully. Instead our study follows many others in operationalising cultural capital using participation in cultural activities. However, it is worth noting when interpreting this study's results that children's participation in cultural activities may not result in cultural capital per se.

This distinction between cultural capital and participation in cultural activities has ramifications for many aspects of this study. If cultural capital crystallises later in life, does a measure of participation in cultural activities accurately capture an individual's cultural capital? For instance, if a parent with very high cultural capital with decades of cultural participation doesn't go to the theatre for a year, will this really lower their cultural capital levels? This is why it is important not only that I have multiple cultural participation measures for parental cultural capital but that I also have a measure asking parents how important they believe cultural activities are for their child which is a more internalised cultural capital measure. However, I believe this is much less of an issue in early childhood where cultural capital is unlikely to be so crystallised. For instance, Bourdieu (1986, p. 253) notes that key to the transmission of cultural capital in this period is the "usable time (…) available to it", suggesting that the accumulation of cultural capital requires investment within this period. Indeed, if the accumulation of cultural capital in early childhood does rely heavily on an investment of time and resources then this benefits our use of cultural participation measures, especially ones with frequency measures, as a proxy for a child's cultural capital. It is also worth noting that it would be incredibly difficult to ask a child, especially a young child, about their internalised cultural capital.

Due to its successful employment in previous studies on cultural capital, this study will begin by splitting cultural capital into two parts: formal cultural activities and reading. Comparing between these two measures will be most useful when looking at whether cultural capital affects educational achievement. Previous research (Cook, 1997; De Graaf et al., 2000) has claimed that cultural capital's educational effect comes solely from the reading element of

cultural capital and not the more formal cultural activities. This study will explore this hypothesis in early childhood. If this study finds that reading has a significant positive effect on cognitive test scores but that formal cultural activities have no significant positive effect then this would provide support for the hypothesis that it is the reading element of cultural capital that has an educational effect. However, if I find both elements are educationally rewarding then this might suggest that the divide between reading and formal cultural activities is an unnecessary one. Of course, I might also find that neither elements were educationally beneficial in early childhood.

I will now document how I will operationalise these two components of a child's cultural capital, beginning with the reading element.

Reading

As discussed in the literature review, research has suggested that reading based activities are a crucial element of cultural capital and are linked with educational benefits (Crook, 1997; De Graaf, 2000; Sullivan, 2001). Therefore, it seems crucial that I have a measure of reading in my operationalisation of cultural capital for the child. Having a reading element of cultural capital is also vital in allowing me to try and answer my research question on a possible distinction between reading and more formal cultural activities.

Our measure for reading comes from a question in the survey which asks "On how many days in the last week has [*childname*] looked at books or read stories?" This question is asked in sweeps 2 through to 5. This provides me with a measure ranging from 0 to 7 referring to how many days the child read books or stories. Table 2 below shows the distribution of this variable across the four sweeps of data I will use.

Table 2. Distribution of the child's reading variable across sweeps 2-5.

Days per week reading books	Age			
	2	3	4	5
0	75 (1.7%)	44 (1.1%)	34 (0.9%)	56 (1.5%)
1	71 (1.6%)	40 (1.0%)	44 (1.1%)	61 (1.6%)
2	168 (3.7%)	118 (2.8%)	109 (2.7%)	141 (3.7%)
3	183 (4.1%)	152 (3.6%)	137 (3.4%)	170 (4.4%)
4	161 (3.6%)	151 (3.6%)	135 (3.4%)	180 (4.7%)
5	169 (3.8%)	197 (4.7%)	259 (6.5%)	208 (5.4%)
6	52 (1.2%)	75 (1.8%)	56 (1.4%)	67 (1.8%)
7	3,630 (80.5%)	3,415 (81.5%)	3,218 (80.6%)	2,949 (77.0%)
Total	4,509 (100%)	4,192 (100%)	3,992 (100%)	3,832 (100%)

As a result of the high proportion of children falling into the upper category 7, signifying the child was read to every day, I also created a dummy variable for each age signifying simply if the child was read to every day or not. Table 3 shows the distribution of this variable.

Table 3. Distribution of reading dummy variable documenting whether the child read seven days in last week. Sweeps 2-5.

Days per week reading books	Age			
	2	3	4	5
Less than once a day	879 (19.5%)	777 (18.5%)	774 (19.4%)	883 (23.0%)
Once a day	3,630 (80.5%)	3,415 (81.5%)	3,218 (80.6%)	2,949 (77%)
Total	4,509 (100%)	4,192 (100%)	3,992 (100%)	3,832 (100%)

I will use a combination of these two types of variable to measure reading through my analyses. I will document which I used in each analysis later in the chapter.

I have no measure on what types of books children read. Bourdieu (1984, p. 116) stated that those higher in cultural capital tend to prefer the “rarer types of reading”. However, as

discussed in the literature review, more recent research has suggested that it is the act of reading books itself which is important for cultural capital (De Graaf and De Graaf, 2002; Bennett et al., 2009) and so I believe this is not an issue with my measure.

Formal cultural activities

I now move on to explain how I will operationalise the formal cultural activities component of early childhood cultural capital. For my formal cultural activities measures I will be using a combination of variables which look at a child's participation in the following activities: library; concert/theatre; museum/art gallery; zoo/aquarium.

For each cultural activity in the dataset there are two main variables: one which measures whether the child has participated in the cultural activity in the previous twelve months and a subsequent variable which measures how often the child participated in this activity in the previous twelve months. The second question is only asked to those who replied that their child did participate in that activity in the previous twelve months. Its response categories are:

1. Several times a week
2. Once or twice a week
3. At least once a month
4. Every few months
5. At least once

I combined this variable with the original variable to create a single variable which documented how often a child participated in a given cultural activity in the previous twelve months. I recoded these variables so that they represented a scale going from the fewest to the most visits:

0. "Not taken at all"
1. "At least once"
2. "Every few months"
3. "At least once a month"
4. "Once or twice a week"
5. "Several times a week"

Library

My measure for the child's visits to libraries simply asks if a child visited the library in the past twelve months and then if so how often they visited. It was a difficult decision for me to include library usage as an element of the formal cultural activities component of cultural capital over

the reading component as it clearly straddles both sections of the divide. However, as discussed in the literature review (p. 26), I believe in the context of early childhood, library usage makes more sense as a component of the formal cultural activities.

Concert/theatre

I will also use a measure looking at concert and theatre attendance which asks how often children went to either a concert, play or pantomime in the previous twelve months. The main problem with my measure on concert and theatre attendance is that it combines concert attendance and theatre attendance under one category so that the two are indistinguishable. Both of these activities have been viewed as key elements of cultural capital in past research as mentioned in the literature review (p. 26) and it is unfortunate that this study will be unable to treat them as separate entities. Nevertheless, it is hugely beneficial that I have measures for these two important activities in my research despite the variables' flaws.

Museums/art galleries

I have a variable which asks how often the child went to a museum, an art gallery or historical sites in the previous twelve months. This variable again has problems from the fact that it combines many different cultural activities into one variable. Much contemporary research has shown that the world of visual art is extremely exclusive (Bennett et al, 2009) and it is certainly a shame that this research cannot properly explore this relationship in early childhood due to the nature of the variable.

Zoo/aquarium/farms

As part of my formal cultural activities component, I also use a question which asks how often children visited a zoo, aquarium or farm in the past twelve months. This question details parents to not include cases where the child lives on a farm.

Cinema and TV

One measure which I had considered using as part of the child's cultural capital concerned how many times the child was taken to the cinema in the last year. However, I decided to exclude this variable due to the strength of argument made by Bennett et al. (2009) that within modern Britain, cinema attendance should not be thought of as signifying cultural capital. During my structural equation modelling analysis, I explored a cultural capital latent construct which included cinema visits. However, when looking at the factor loadings for this latent construct, I found that it did not support cinema visits being included. Additionally, when exploring the model with and without cinema attendance, all six measures of goodness of fit were preferable

when cinema attendance was excluded from the cultural capital construct. This fell in line with the literature and backed up my decision not to include cinema visits as a measure of cultural capital in early childhood.

I also decided to exclude TV watching as part of my measurement of formal cultural activities. Sullivan (2001) had suggested including high-brow television viewing as a measure of cultural capital. As I discussed in the literature review (p. 27), I believed that if you had data on the types of TV shows children watched then it might make sense to explore this as a potential aspect of cultural capital. However, I only have information on how often the child watched television and so I decided to exclude this as a measure.

I have measures for these formal cultural activities that I decided to use both at age two (sweep two) and age four (sweep four). I also used these measures to create my variables for cultural omnivorousness and cultural voraciousness.

Cultural omnivorousness

Cultural omnivorousness is a concept which focuses on the variety of cultural tastes and practices individuals engage in. I will attempt to operationalise cultural omnivorousness by looking at the number of different cultural activities a child has done in the past twelve months. I will do this by creating a variable which counts how many of the following activities the parent reported that the child had attended in the past twelve months: library; concert/theatre; museum/art gallery; zoo/aquarium. This measure will be a number from zero to four where the higher the number, the higher the child's cultural omnivorousness. Unfortunately, while there are a good number of activities listed in the survey question, this measure can only distinguish between four activities due to the nature of the variables it is created from.

This is an element where it would be beneficial if the cultural activities variables didn't lump certain distinct cultural activities together. This study would have a far more nuanced operationalisation of cultural omnivorousness if there were more cultural activities to discern between. Because some of the categories are merged, we are likely to have an unclear idea over the true number of different activities that the children participated in. For instance, a child who has been both to the theatre and to concerts in the past year is indistinguishable from a child who has only been to the theatre in the past year. These two children should ideally be viewed as participating in a different number of cultural activities but because of the design of the survey, this is not the case.

This study will have two measures for cultural omnivorousness: one that is made up of answers from sweep two and one that is made up of answers from sweep four. Having a longitudinal element to my omnivorousness measure is of great benefit to my study, allowing me to look at whether this is a stable element of cultural capital and whether its effects are consistent over time.

Below you can see the distribution of my cultural omnivorousness variables at age two and age four.

Table 4. Distribution of cultural omnivorousness variable for age two and age four.

Cultural omnivorousness	Age	
	2	4
0	510 (11.3%)	122 (3.1%)
1	1,393 (30.9%)	516 (12.9%)
2	1,439 (31.9%)	1,037 (26.0%)
3	861 (19.1%)	1,292 (32.3%)
4	309 (6.8%)	1,027 (25.7%)
Total	4,512 (100%)	3,994 (100%)

Cultural voraciousness

Cultural voraciousness refers to the tendency for individuals to try and consume as much culture as possible. This study will attempt to operationalise this concept by looking at how often children participate in cultural activities. The more often children participate in cultural activities, the more culturally voracious they are. The frequency with which children were taken to the four sets of activities in the previous twelve months will be combined to create the cultural voraciousness score.

I created my measure for cultural voraciousness by adding the frequency scores for the four cultural activity variables I am using. As discussed earlier, frequency of visits for each cultural activity is measured on a scale from 0-5:

0. "Not taken at all"
1. "At least once"
2. "Every few months"
3. "At least once a month"

4. “Once or twice a week”
5. “Several times a week”

This means that my cultural voraciousness measure forms a score from 0-20 where higher scores indicate higher cultural voraciousness. One problem with this measure is that the response categories are not evenly spaced out in the cultural activity variables. For instance, is the distance between “Every few months” and “At least once a month” really the same as the distance between “Once or twice a week” and “Several times a week”? This is something that will have to be acknowledged as a drawback of my measure for cultural voraciousness.

While the fact that certain cultural activities are grouped together is a major problem for my cultural omnivorousness measure, it is less of an issue with this cultural voraciousness measure. The variables I am using to construct this measure ask how often the child has done a particular set of activities, such as visiting the theatre and concerts, in the past twelve months and so the parents answer will supposedly combine both the child’s visits to the theatre and to concerts. This means that I have roughly the same information in my cultural voraciousness measure now as I would if I had separate measures for concert and theatre attendance.

Similarly to cultural omnivorousness, there will be two measures for cultural voraciousness: one at age two and one at age four. Below you can see the distribution of my cultural voraciousness variables at both ages.

Table 5. Distribution of cultural voraciousness variable at age two and age four.

Cultural voraciousness	**Age**	
	2	**4**
0	510 (11.31%)	122 (3.05%)
1	744 (16.50%)	244 (6.11%)
2	699 (15.51%)	389 (9.74%)
3	575 (12.76%)	429 (10.74%)
4	590 (13.09%)	497 (12.44%)
5	470 (10.43%)	565 (14.15%)
6	362 (8.03%)	516 (12.92%)
7	239 (5.30%)	442 (11.07%)
8	143 (3.17%)	336 (8.41%)
9	90 (2.00%)	241 (6.03%)

10	41 (0.91%)	119 (2.98%)
11	28 (0.62%)	62 (1.55%)
12	10 (0.22%)	20 (0.50%)
13	5 (0.11%)	8 (0.20%)
14	0 (0%)	2 (0.05%)
15	0 (0%)	0 (0%)
16	1 (0.02%)	2 (0.05%)
17	1 (0.02%)	0 (0%)
18	0 (0%)	0 (0%)
19	0 (0%)	0 (0%)
20	0 (0%)	0 (0%)
Total	4,508 (100%)	3,994 (100%)

One of the biggest disappointments for this study is the fact that Growing Up in Scotland provides detailed accounts of who took the child to particular cultural activities but yet unfortunately these variables are flawed. After each cultural activity variable, another variable is present which asks "who was the last person to take that child to that particular activity?" The list of those who might take the child to the activity is very detailed including grandparents, siblings and childcare staff. However, the problem is that I only know who the last person to take the child was. For any child who has participated in an activity more than once in the last twelve months, this variable becomes unfortunately rather restricted. For this reason, I only explore these additional variables in more basic descriptive analyses.

Parental cultural capital

In order to explore the transmission of cultural capital from parent to child, my study will need some sort of measure for parental cultural capital. I am unfortunately rather restricted in how I operationalise parental cultural capital due to the lack of appropriate variables in the Growing Up in Scotland data. While there are some variables relating to parental reading, variables measuring parental participation in highbrow culture are unfortunately largely absent. However, there are still a number of variables which I believe are good indicators of parental cultural capital. My operationalisation of parental cultural capital will involve four separate measures: the parents' reading activity; how often the parents visit the library; how important

parents think cultural activities are; and how often the parents write stories, songs, poems or lyrics.

The variables on parental reading activity cover both parents where available. There is a measure of whether they read books for pleasure in the past twelve months and then a separate indicator which records how often they read books for pleasure in the past week. While I hoped this second question on frequency of reading for pleasure would provide a more detailed picture of parental reading practices, the measure seems unnecessarily narrow in range, asking parents about how often they have read a book for pleasure in the last week only. It is also worth pointing out that this question is asked to parents when their child is only two years old which could very feasibly affect how often a parent might read for pleasure. I have decided therefore to exclude this second measure, focusing instead on whether or not parents reported reading books for pleasure. I have created a variable which combines the answers for both main respondent and partner to give a single measure for the number of parents a child has who read books for pleasure, ranging from 0 to 2.

I employ a very similar strategy in creating a measure for whether parents write stories, songs, poems or lyrics. The main respondent and partner are both asked whether or not they have written stories, songs, poems or lyrics in the past twelve months. I have then created a new variable which measures how many of the child's parents write stories, songs, poems or lyrics. I refer to this variable as parental creative writing. Both this variable and the variable on parental reading are taken from sweep 2, when the child is two years old.

Another of my measures for parental cultural capital concerns the parents' library usage. For this measure I have utilised a variable from sweep 3 which asks the main respondent whether there is a library in their area and how often they use it. The main respondent is given four options to choose from: "there isn't one in this area"; "there's one here and I don't use it"; "there's one here and I use it sometimes"; and "there's one here and I use it often". I recoded this variable so that "there isn't one in this area" and "there's one here and I don't use it" were in the same category. I did this because for this measure I wanted to specifically look at how often the parent used the library rather than the reasons why. My measure of parental library usage therefore has three categories: one for parents who don't use the library; one for parents who use the library sometimes; and one for parents who use the library often. One key drawback of this measure is that it only asks the main respondent about how often they use the library, excluding any second parent's library usage from the measure. While this is certainly

a drawback, I believe having a measure on parental library usage is of great benefit to the study, even if it is for only one parent.

I also have a measurement for parental library usage collected when the child is aged six. This is in the same form as the parental library usage measure at age two. Unfortunately, this variable is measured at least a year after all of the other variables in my analysis. In terms of cause and effect, it is therefore difficult to utilise this variable as a predictor of something, such as the child's cultural capital, that is measured before it. However, the ability to have a parental cultural capital variable with more than one measurement point is very attractive and so I will use this variable in certain analyses and present the results using this variable with caution.

My final measure for parental cultural capital details how important the parents of the child think cultural activities are. The parents are asked to judge on a five point scale how important they think it is that their child experiences cultural activities:

1. Not at all important
2. Not really important
3. Neither important nor unimportant
4. Quite important
5. Very important

While this measure doesn't capture parents' own cultural participation, I believe that it provides a great insight into parents' internalised cultural capital. As highlighted in the literature review, both Bamossy (1982) and Walker et al (2002) have shown that parental interest in cultural activities being associated with a child's cultural participation. It is important to note that this question is asked to parents towards the end of a survey which has already asked them how often their children participate in certain cultural activities. There might be a chance that parents will alter their answer to how important they think cultural activities are depending on how often they have just stated their child engages in cultural activities. This question is asked in the second sweep.

While there is little information on the more formal cultural participation side of parental cultural capital, besides the main respondent's library usage, it is interesting to acknowledge the blurring of the child's cultural capital and parental cultural capital as discussed by Aschaffenburg and Maas (1997, p. 575). For instance, I have measures of how often the child is taken to the museum or art galleries. If the child is taken to museums or art galleries by the parents multiple times per year this would probably be a sign of high cultural capital for the

child but it of course also means that the parents have been to the museum or art galleries multiple times themselves that year which might indicate a high level of cultural capital for the parents. This can be seen as a good example of how the transmission of cultural capital isn't as one-way and passive as the word transmission would suggest.

Educational ability measures

One of the key research questions I have is whether cultural capital has an educational effect. This study will follow the information processing theory which deems that cultural capital's educational benefit comes from the fact that it develops intellectual skills and resources. This study will therefore examine cultural capital's educational benefit by using cognitive ability test scores which are present in the Growing Up in Scotland dataset. The measures of ability available are a Naming Vocabulary test score, which measures the child's spoken vocabulary by asking them to name objects in pictures, and a Picture Similarities test score, which measures the reasoning ability of young children by asking them to complete patterns. These are both part of the British Ability Scales which have been used and been tested for a considerable amount of times with many studies examining their validity (Hill, 2005). These tests are also theoretically grounded in the work of key developmental psychologists and have been tailored to be specific to Britain (Hill, 2005).

These outcome measures are available in sweep three and sweep five of the data when the children are around age three and age five respectively. There are several formats that the test scores can be used in: the raw score; the ability score; the t-score; and the percentile score. This study will use the t-scores for both Naming Vocabulary and Picture Similarities. For an explanation of how these t-scores were created, see Bromley (2009, pp.6-7). The t-scores are normative and are thus comparable which is very useful. This allows me to compare scores across the sweeps and across the two tests. T-scores range from 20-80 and have a mean value of 50.

Background variables

This study will take into account a number of background variables. These will help to provide a much clearer account of what the analyses say about cultural capital. They will help to determine what factors influence the accumulation of cultural capital in early childhood. They will also make sure that if I do find an association between cultural capital and educational test scores that I can be fairly confident that I am not accidentally capturing some other variable

which I have not controlled for. Distributions for all of these background variables can be found in the appendix (Tables 55-64).

If I wish to explore whether cultural capital is less available to children from more disadvantaged backgrounds, I need to have appropriate factors to measure disadvantage. Similarly, if I want to look at whether cultural capital might be viewed as a cause of educational inequalities in early childhood then I need to be able to control for other key sources of educational inequality in my models.

I have discussed in the literature review how education level, social class, deprivation level and household income were all significantly associated with cultural capital in previous studies (Bennett et al., 2009; Peterson & Simkus, 1992; Peterson & Kern, 1996; Peterson, 2005; Katz-Gerro and Sullivan, 2010; Scottish Government, 2009). Similarly, several studies have shown these same measures of socio-economic background affecting a child's cognitive ability in early childhood (Bromley, 2009; Bradshaw, 2011; Dearden et al., 2011; Blanden and Machin, 2010; Sylva et al., 2004). I will make sure to control for these four measures when looking at what factors are associated with a child's cultural capital and when looking at whether cultural capital has an educational effect.

The child's family's **social class** will be measured using the NS-SEC social class categorisation system. The NS-SEC is a good measure of social class as it has been developed from a sociological measure – the Goldthorpe Schema – which has been widely used in research. It has also been thoroughly validated (ONS, 2005). The particular version of the NS-SEC in Growing Up in Scotland that I will be using splits people into six social class categories based on their occupation: 1. Managerial and professional occupations; 2. Intermediate occupations; 3. Small employers, etc.; 4. Lower supervisory and technical occupations; 5. Semi-routine and routine occupations; and 6. Never worked. I will recode the two parents' measure to create one variable which measures the highest NS-SEC of either parent using Erikson's (1984) dominance schema. It is also crucial that I have a measure for social class in order to explore whether my data follows the cultural mobility model or not as I will discuss further later. I will utilise measures of social class from when the child is aged two and when the child is aged four.

Parental education level will be measured using variables in GUS which measure the parents' highest educational qualifications. This is split into six categories: degree or equivalent; vocational qualification or below degree; Higher Grade or equivalent; and Standard Grade or

equivalent; other; no qualifications. I have recoded these variables to create a variable which measures the highest educational qualification of either parent with the measure split into four categories: degree or equivalent; vocational qualification or below degree; Higher Grade or equivalent; and Standard Grade or equivalent or lower.

Growing Up in Scotland measures **household income** before tax by asking parents in the survey to provide information on the amount of income they receive, covering earnings, benefits, tax credits and interest from savings (Bradshaw et al., 2015, p. 93). This provides an annual figure which is then equivalised to take account of household size and composition. Equivalisation involves modifying a family's household income so that it takes account of family size due to the fact that larger households usually need a higher income to achieve an equivalent standard of living to a smaller family and also takes account of family composition as living costs for adults are usually higher than for children (ONS, 2015, p. 2). Once this has been applied, "households with the same equivalised income can be said to have a comparable standard of living" (ONS, 2015, p. 2). Using the equivalised household income allows me to compare between households of different size and composition (Bradshaw et al., 2015, p. 93). I will use measures of household income from when the child is aged two and aged four.

I will look at the **deprivation level** of where a child lives by using a measure called the Scottish Index of Multiple Deprivation (SIMD). This index gives a score which classifies how deprived certain areas are. In GUS, the measure I have for SIMD splits areas into five quintiles from the least deprived areas to the most deprived areas.

The **sex of the child** is another background measure which it is important I control for in this study. I have highlighted in the literature review that there is strong evidence of children's test scores varying by the sex of the child (p. 34) and so it is crucial that any regression on the child's cognitive test scores controls for the sex of the child. I have also shown how previous empirical studies on cultural capital have found differences in cultural capital levels based on the individual's sex (DiMaggio, 1982; Katz-Gerro, 2002; Bihagen and Katz-Gerro, 2000; Mohr and DiMaggio, 1995; Dumais, 2002) and so this background measure will also be useful in any analysis looking at what factors affect the child's cultural capital levels. Sex of the child will be measured using a dichotomous variable documenting whether the child is a boy or a girl.

One background variable which I decided to look at was whether or not the child was the **first born** in her or his family. I wanted to explore whether extra children in the family require more resources which might negatively affect a child's cultural participation. In this hypothesis,

being a first born would be beneficial for a child's cultural capital. There is also the competing hypothesis that having elder siblings could result in being taken to cultural activities more as a very young child. There are certain cultural activities which might not be particularly suited to very young children such as perhaps the theatre or concerts; however, these activities are more suited to slightly older children. The hypothesis speculates that those children with older siblings might get taken along to these cultural activities aimed at slightly older children because their older siblings are attending them. If my analysis was to provide evidence for this hypothesis it would need to show that at age two, being a first born child is associated with fewer cultural visits than those who have older siblings.

Another variable that I have decided to look at is whether or not the child **had a sibling born during the sweeps**. Having another child enter the family is a huge family event and one which will no doubt affect every level of the child's life as well as obviously the parents'. It is therefore very important that I include a measure for this event in my analysis. I have created variables which let me know if the child has had a new sibling enter the family by age two and age four. This is a simple dummy variable and so does not let me know if multiple new children were born in the family. One area of my research in which having a new sibling could affect the child is the child's engagement in cultural activities. We might speculate that having a new sibling could reduce the amount of cultural activities the child participates in. This might be due to the child's parents having less time and money to spend taking the child to cultural activities due to the arrival of a new-born baby in the house.

One aspect of cultural participation which I hope to explore in this thesis is the physical availability of these cultural activities. While many studies correctly emphasise the social barriers for many cultural activities, many key studies fail to acknowledge the potential geographical barriers (e.g. Sullivan, 2001; DiMaggio, 1982; Dumais, 2006; De Graaf, 1986). I hope my study can rectify this somewhat by including a number of variables focusing on the area that the child lives.

This study will control for **urban-rural classification**. Cultural institutions are often situated in urban areas and having a measure of whether the children live in an urban or rural area will provide this study with a way of examining the more practical realities of cultural participation. I will use measures of urban-rural classification from when the child is aged two and four. This study uses the Scottish Government's 6-fold urban-rural classification (Table 2.1 in Scottish Government, 2014, p. 5):

1. Large urban: Settlements of 125,000 or more people.
2. Other urban: Settlements of 10,000 to 124,999 people.
3. Small accessible towns: Settlements of 3,000 to 9,999 people and within 30 minutes' drive of a settlement of 10,000 or more.
4. Small remote towns: Settlements of 3,000 to 9,999 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.
5. Accessible rural: Areas with a population of less than 3,000 people, and within a 30 minute drive time of a settlement of 10,000 or more.
6. Remote rural: Areas with a population of less than 3,000 people, and with a drive time of over 30 minutes to a settlement of 10,000 or more.

Another way this study will explore whether a lack of physical access to cultural activities affects a child's cultural participation is using a variable which measures whether the parents are happy with the **range of activities available to their child**. This is done on a scale of four responses:

1. I am very happy with the range of activities that my child has access to
2. I am quite happy with the range of activities that my child has access to
3. I would like my child to have access to a slightly wider range of activities
4. I would like my child to have access to a much wider range of activities

Of course, one issue with this variable is that it is very subjective. The parents of two children living in the same area might give very different answers based on what they see as an appropriate amount of activities which they have access to. I hope that this variable will work well in combination with my urban-rural classification variable. It is important to acknowledge that this variable does not stress *cultural* activities. This variable encompasses all activities although cultural activities are of course included within this.

I will also include a variable on the **number of children's books in the household**. This measure will utilise the question "About how many children's books do you have in your home at the moment, including library books, that are aimed at children under 5?" which was asked when the child was aged 10 months and again when the child was aged 3. Parents were asked to select one of the following categories:

1. None
2. Between 1 and 10
3. Between 11 and 20

4. Between 21 and 30
5. More than 30

I merged the two categories 'None' and 'Between 1 and 10' to create one single category 'Between 0 and 10'. I did this as such a small proportion of children fell in the 'None' category in both sweeps: 0.92% in sweep 1 and 0.19% in sweep 3.

My measure for **childcare** usage is a dummy variable which asks at age two and age four whether the child was regularly using a form of childcare. As discussed in the literature review, it would have been ideal to have had a measure for childcare quality rather than usage. A study by Bradshaw et al. (2014) linked Growing Up in Scotland data to administrative data from the Care Inspectorate and Education Scotland. Unfortunately, following this same procedure was not feasible for my own study. However, even though my even though current measure for childcare usage is very basic, I still think it's beneficial to have some measure rather than none.

Because this study uses a longitudinal dataset, we have data on certain measures at different time points as discussed. The following table details which sweep the measures come from depending on the age the child is when the dependent variable is measured.

Table 6. The sweep each independent variable is measured at depending on the dependent variable measurement point.

Independent variables	**Dependent variable measurement point**	
	Age 2-3	**Age 4-5**
Social class	Sweep 1	Sweep 4
Household income	Sweep 2	Sweep 4
Number of children's books in the household	Sweep 1	Sweep 3
Regular childcare usage	Sweep 2	Sweep 4
Urban-rural classification	Sweep 2	Sweep 4
Sibling born since survey started	Sweep 2	Sweep 4
Reading	Sweep 2-3	Sweep 4-5
Cultural omnivorousness	Sweep 2	Sweep 4
Cultural voraciousness	Sweep 2	Sweep 4
Parental education level	Sweep 2	
Parental reading	Sweep 2	

Parental library usage	Sweep 2
Parental creative writing	Sweep 2
Parental cultural importance	Sweep 2
First born	Sweep 1
SIMD	Sweep 2
Access to activities	Sweep 2
Gender	Sweep 2

Because this thesis tries to combine two separate research areas, there are a number of additional independent variables that could have been utilized. We found that educational research and early childhood research tended to control for different variables within their research. To try and control for all the key variables from both these bodies of research within a model wouldn't have been feasible as the estimation of the models would have failed to converge. This meant that certain variables were excluded from our analysis based on their relative importance within the literature (age of mother, breast feeding, birth weight, single-parent status) while several other variables were excluded after preliminary analysis in order to have a more parsimonious model.

Two key variables which were excluded after preliminary analysis were ethnicity and hours worked. In all preliminary models, ethnicity had no significant effect. This variable also suffered from statistical power because of the low proportion of ethnic minorities in Scotland with the final variable used splitting respondents simply into two ethnic categories: white and non-white. In future, research using *Growing Up in Scotland* might consider using the variable measuring whether English was the parents' first language as an alternative to this ethnicity measure. For hours worked, once social class and household income were controlled for, this variable had no significant effect in any preliminary models. For many similar excluded variables, their main effects were captured by variables already included in the models.

In the future, research looking into this area might run multiple models for each dependent variable. For instance, we might have had an early childhood literature model and an educational research-based model with those key independent variables from each element of the literature represented in each respective model.

Cultural mobility model

This study will aim to explore whether my data lends support to the cultural mobility model over the cultural reproduction model. While there are some (DiMaggio, 1982) who view the cultural mobility model as stating that cultural capital provides greater benefits to lower-class children than others, this study will use the definition shared by Aschaffenberg and Maas (1997) and Kingston (2001) that cultural capital can be a resource for everyone regardless of social class. This is in contrast to the cultural reproduction model where high-class children supposedly reap far greater reward from cultural capital.

I will be able to view which of these theories fits closest with the data by using interaction effects in any regression I do on cognitive test scores. Interaction effects explore whether the effect of one independent variable on a dependent variable differs depending on the value of another independent variable. A significant interaction effect within a model indicates that this is the case. For the cultural mobility question, I will be exploring whether cultural capital's effect on the educational test scores differs depending on the social class of the child.

There are three possible results that could arise from this interaction effect: a significant positive association; a significant negative association; or a non-significant result. A significant positive result would suggest that cultural capital's educational effects are greater for those from lower social classes which would provide support for DiMaggio's (1982) formulation of the cultural mobility model. A significant negative result would suggest the opposite – that any educational benefits of cultural capital are greatest for higher-class children. This would be seen as providing support for the cultural reproduction model. A non-significant result would hint that cultural capital's educational effects are roughly similar for all children, regardless of social class. This would provide evidence for the cultural mobility model as used by Aschaffenberg and Maas (1997).

Analysis Chapter 1

In my first analysis chapter, I will use multiple linear regression analysis and logistic regression analysis. Using my parental cultural capital measures and other background measures, I will regress upon my cultural omnivorousness, cultural voraciousness and reading measures to try and explore what factors are associated with a child's accumulation of cultural capital in early childhood. I will run separate regressions for the different age measures. If I find that my

parental cultural capital variables are significantly associated with my dependent variables after controlling for other background measures, then this would provide evidence that parental cultural capital was associated with a child's cultural capital. If any of the background factors are significantly associated with my cultural capital dependent variables after controlling for parental cultural capital's effects, this would suggest that these factors are associated with the accumulation of cultural capital in early childhood.

I will also run regressions on my Naming Vocabulary and Picture Similarities test scores to try and explore whether early childhood cultural capital has an educational effect. These regressions will use my reading measure, one of cultural omnivorousness or cultural voraciousness and my background measures as independent variables. From these regressions I will also be able to explore whether the reading and formal cultural activities components of early childhood cultural capital have different educational effects. I will also include an interaction term between social class and the child's cultural capital in this regression to explore whether cultural capital's educational effects depend on a child's social class.

The Naming Vocabulary and Picture Similarities test scores are from when the child is both aged three and aged five. In those regressions focused on age three test results, I use independent variables measured at age three or below. Where variables have been measured again since age three, I utilise these updated measures when regressing on age five test results. For the age three test results regressions, I use my age two measures for cultural omnivorousness and cultural voraciousness and for the age five regressions, I use my age four measures. Because I have four different time points where reading was measured, I decided to create two variables which were aggregate scores of how often the child read: one measured how often the child read books at age two and age three and the other was for age four and age five. This gave me one variable I could use in the age three test score regressions and one I could use in the age five regressions. These two variables ranged from 0 to 14 where children scoring 14 were read to everyday in both sweeps that the measure captured.

Table 7. Distribution of aggregated reading variable at age 2-3 and age 4-5.

Reading score	Age 2-3	Age 4-5
	Frequency (%)	Frequency (%)
0	11 (0.3%)	7 (0.2%)
1	5 (0.1%)	7 (0.2%)
2	25 (0.6%)	15 (0.4%)

3	25 (0.6%)	24 (0.6%)
4	35 (0.9%)	31 (0.8%)
5	36 (0.9%)	54 (1.5%)
6	43 (1.0%)	49 (1.3%)
7	84 (2.0%)	69 (1.9%)
8	83 (2.0%)	107 (2.9%)
9	148 (3.6%)	140 (3.8%)
10	192 (4.7%)	171 (4.6%)
11	197 (4.8%)	174 (4.7%)
12	228 (5.5%)	238 (6.4%)
13	88 (2.1%)	85 (2.3%)
14	2,917 (70.9%)	2,565 (68.7%)
Total	4,117 (100%)	3,736 (100%)

I also decided to use these aggregated measures when looking at what factors are associated with the child's reading. However, due to the nature of my reading variable, I encountered diagnostic problems when running regressions upon these two variables. This was because so many children fell into the upper-most category signifying they read seven days a week. I therefore decided to create two dummy variables from these aggregated variables which measured whether or not the child read every day in both sweeps.

Table 8. Distribution of aggregated reading dummy variable documenting if child was read to seven days a week or not at age 2-3 and age 4-5.

Reading dummy	**Reading (age 2-3)**	**Reading (age 4-5)**
	Frequency (%)	**Frequency (%)**
Less than once a day	1,200 (29.15%)	1,171 (31.34%)
Once a day	2,917 (70.85%)	2,565 (68.66%)
Total	4,117 (100%)	3,736 (100%)

I then used logistic regression analysis to explore what factors were associated with the odds that a child read books every day.

One technique which I will employ in all of my regressions is the hierarchical introduction of independent variables into my models. As well as being able to explore the issue of mediation

– which will be discussed later in the chapter – through this technique, it also allows me to look at how much certain independent variables contribute to the explanation of the dependent variable in the model. I do this through looking at a measure called R-squared which lets me know the proportion of variance in the dependent variable which is explained by my independent variables. The R-squared value is very useful when trying to look at the effect certain independent variables have on the model. For instance, in my analysis I will use R-squared to look at how much of the variance of the child's cultural capital is explained by parental cultural capital. I will do this by first running a regression model on one of my cultural capital measures with all of my background variables apart from those parental cultural capital measures and reporting the R-squared from this model. I will then run the same model but this time including those parental cultural capital measures and again report the new R-squared. The difference in the R-squared between these two models will represent how much explanation parental cultural capital adds to the child's cultural capital. The R-squared is also very useful for telling me if my model fits the data well – a high value indicates this.

I will be using predictive margins within this chapter to help elucidate the role of certain key variables in my analysis. For a given independent variable, predictive margins uses the regression model to calculate values for the dependent variable for every value of the independent variable by calculating what the mean predicted value would be for the dependent variable if all observations had that particular value for the independent variable while keeping all other values unchanged (SSCC, 2016). For instance, if I wanted to look at the role of parental reading for a child's cultural omnivorousness, predictive margins would use my regression results to first calculate the mean cultural omnivorousness score if all children had no parents who read for pleasure in the past twelve months – all the other child's variables remain unchanged. It would then do the same for having one parent who read for pleasure and then for two parents. This would provide me with three values – the predicted mean cultural omnivorousness for all parental reading response categories. In this chapter, I will present these margin values graphically as I believe this is more intuitive.

I will test the diagnostics of the models in this chapter using a number of different techniques. To begin with I will look at the distribution of the residuals for each regression. The residuals should typically be normally distributed. I can examine how normally distributed they are in a number of ways. I can plot the residuals as a histogram with a normal curve added to examine how normally distributed they are. Another way of looking at the normality of the residuals is through pnorm and qnorm graphs. A pnorm plot is sensitive to deviations from

normality near the centre of the distribution of the residuals while a qnorm plot is helpful in showing whether there is any deviation from a normal distribution towards the ends of the distribution. I will use these three methods together to gauge whether the residuals in each model are normally distributed.

I will then look at any particularly outlying residuals and investigate those individuals' responses to the variables in the regression. These will be individuals who didn't really fit the overall pattern of the regression. I will then look at whether removing any of these individuals from the regression would affect the model. Next, I will look at any cases which had high leverage. These are individuals with extreme values on independent variables in the model. Leverage measures how far an independent variable deviates from its mean. The problem with high leverage is that it can affect the regression coefficient estimates. I will then see if excluding these cases affects the model in any great way.

I will then look for any influential cases; cases that would affect the regression estimates if they were removed. This involves looking at both outlying residuals and cases with high leverage. I will run a graph which plots the leverage of cases against their residual squared (so that negative and positive outlying residuals were both obvious). If I find many individuals with both high leverage and high residuals then this would suggest I have a problem with influential cases. Another way of testing for the influence of cases is a test for influence called Cook's D.

I will then check for heteroscedasticity in the models. This refers to the variation in the size of the residuals and whether or not that is random. I will plot the residual values and look to see if there is any pattern tin the variation of the residuals which would indicate there is a problem with heteroscedasticity in the model.

Finally, I will look at the potential issue of multicollinearity. This is a problem whereby predictor variables are too strongly correlated with one another which can seriously affect regression estimates. I will explore the issue of multicollinearity by looking at the vif (variance inflation factor) values for my independent variables. I will look to see whether the vif values for any of my independent variables fall above the value of 10 which as a rule of thumb would mean they require further investigation.

Analysis Chapter 2

In my second analysis chapter I will use structural equation modelling (SEM) to try and run a complete model of cultural capital in early childhood, from what factors are associated with

the accumulation of cultural capital to whether it has any educational benefits. The first section of the model will look at whether social class and parental education level are associated with parental cultural capital, the second section will look at whether parental cultural capital and a number of background factors are associated with the child's cultural capital and the final section of the model will look at whether the child's cultural capital is associated with educational ability after controlling for a number of background factors.

Being able to explore all of these questions within one model will allow me to explore better the dynamics of cultural capital in early childhood. Structural equation modelling allows me to use cultural capital as a dependent variable and an independent variable in one model with cognitive ability being the other dependent variable. In one model I will be able to look at what factors influence a child's cultural capital whilst also looking at whether or not the child's cultural capital has any effect on educational ability. Not only this but later sections of the model will account for earlier sections so that, for instance, I can explore how social class' potential links to parental cultural capital might affect social class' links to a child's cultural capital.

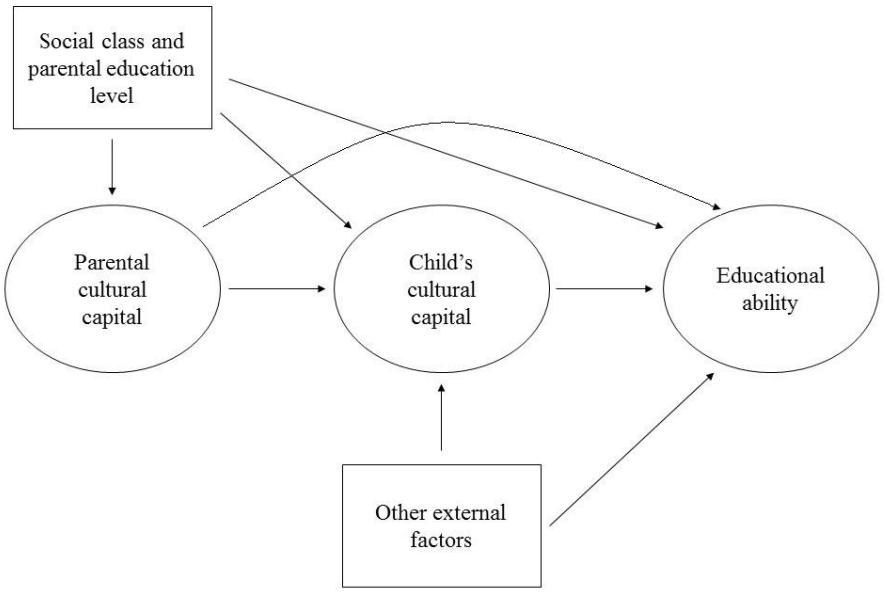


Figure 3. Diagram of the proposed model I want to run in Analysis Chapter 2. Circles indicate latent constructs while rectangles indicate observed variables. Arrows indicate a proposed pathway.

One of the huge benefits of structural modelling is that it allows me to explore latent constructs. A latent construct is one that is not observed itself but is rather inferred from other variables which are observed. This is a very good way of describing cultural capital as a concept as there

is no concrete way to measure cultural capital. Because latent constructs are not directly measurable, instead I must use indicators that represent the underlying construct with Byrne (1998) stating that in order to operationalise a latent construct we must "define the latent variable of interest in terms of behaviour believed to represent it" (p. 4). Structural equation modelling will allow this study to model the concept of cultural capital by looking at those variables which we think cultural capital displays its effect through. I will have latent constructs for educational ability at age three and age five using my two educational test scores.

As well as looking at pathways, structural equation modelling also allows me to model for associations between variables. These associations are directionless and are referred to as covariance. Covariances were included in my model based on a combination of theory and modification indices. Modification indices help to suggest what links would improve the structure of your model; however, it is vital that any change in structure I made was theoretically sound. Covariance between social class, parental education level, SIMD and household income were all controlled for. Covariance was also modelled between my variable for first-born children and having a sibling born. Covariance was also modelled for between how often the child was taken to the library and how often the parent went to the library. I have earlier suggested the difficulty in treating parental and childhood cultural capital as separate measures – a parent who takes their child to the library often, will also be going to the library themselves often. This theoretical decision was backed up strongly by modification indices which showed that the model fit a lot better once covariance between these two variables was included. Having failed to include a parental cultural capital latent construct, it made sense to model for covariance between these parental cultural capital measures, which the modification indices agreed with. Covariance was also modelled between my educational ability latent construct at age three and my educational ability latent construct at age five. Acknowledging that the reading and formal cultural activities components of cultural capital are strongly linked, I also modelled for covariance between my reading variable and my formal cultural activities latent construct.

Using structural equation modelling is advantageous for exploring mediation (Gunzler et al., 2013; Little et al., 2007). Mediation involves being able to discover whether an independent variable's relationship with an outcome variable can actually be explained by a third variable – the mediator (Gunzler et al., 2013). If one independent variable has a significant association with the dependent variable and then once another independent variable is added to the model

that association is reduced then that displays some evidence that the first independent variable's effect on the dependent variable is mediated by the second independent variable while if the association becomes non-significant, this is evidence of 'full mediation' (Little et al., 2007). Sullivan (2001) found in her research that parental cultural capital mediated social class' effect on cultural capital. This is something I would be able to explore in my own study.

The following two diagrams illustrate how this mediation would occur. Before parental cultural capital's link to a child's cultural capital is accounted for (top image in Figure 4), social class would have a significant association with a child's cultural capital. However, once parental cultural capital's link to a child's cultural capital is accounted for (bottom image in Figure 4), social class' effect on a child's cultural capital is no longer significant. This would indicate that parental cultural capital mediated social class' effects on a child's accumulation of cultural capital.

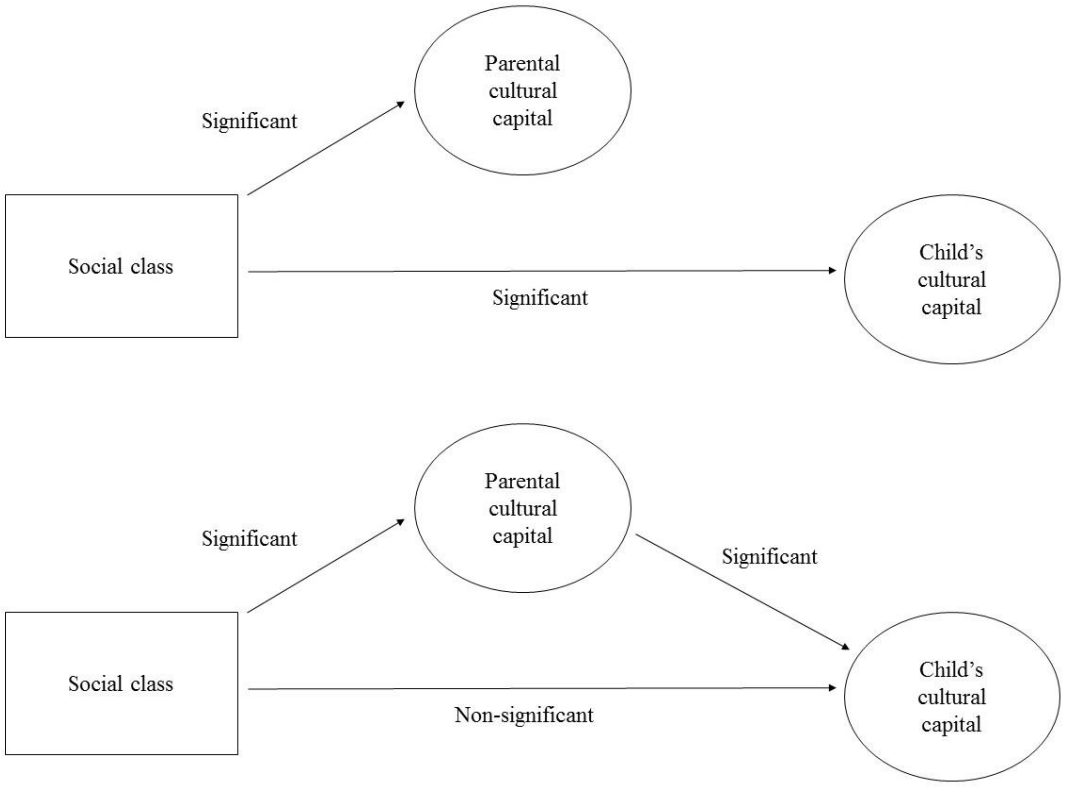


Figure 4. Example of mediation. Bottom image shows parental cultural capital mediating social class' effects on a child's cultural capital.

One of the most revealing elements of structural equation modelling is its ability to let you look at both the direct and indirect effects a variable has on another variable. A direct effect is the

effect an individual independent variable has on a dependent variable, controlling for the effects of all other independent variables (Pearl, 2001). An indirect effect is the mediated effect an independent variable has on the dependent variable. Adding the indirect and direct effects together gives me the total effect a variable has on the dependent variable. Looking at indirect effects will hopefully be very informative for my study, allowing me to look at the nuances involved in early childhood cultural capital. In particular, indirect effects will allow me to look at how much any effect parental cultural capital has on a child's cultural capital comes from those parents' social class and parental education level. Similarly, it will also allow me to look at how much any educational effect a child's cultural capital has, comes through other indirect channels. This will allow me to be much more confident in any conclusions I make about the educational effects of childhood cultural capital.

One element of structural equation modelling which unfortunately creates a problem for my study is that it cannot properly deal with categorical variables, instead treating them as numerical variables. This is an issue for my study as many of my variables are categorical. To compensate for this problem, I ran some simplified Generalized Structural Equation Models which showed that the numerical versions of my categorical variables were having much the same effect as they would have as categorical variables which helped me to accept this issue with the model.

Originally, I had intended to have a latent construct for parental cultural capital in my model. This latent construct would have used the variables: how many parents in the household read; how often the parents go to the library; how important parents think cultural activities are; and parental creative writing. However, Principal Components Analysis was carried out on my four parental cultural capital variables and unfortunately this did not support the idea of parental cultural capital as a latent construct. This is quite disappointing as it could have been very useful and revealing to have a construct measuring parental cultural capital in my model. However, this result is not too much of a surprise as I have always been aware that my measures for parental cultural capital were relatively narrow as discussed earlier. It is better that I do not try and claim I have an appropriate construct for parental cultural capital when theoretically I already knew there were key elements missing.

Below, you can see a representation of my attempt at exploring parental cultural capital's suitability to be a latent construct. We can see that all but one of the parental cultural capital variables fell below 0.3 which I had used as my threshold.

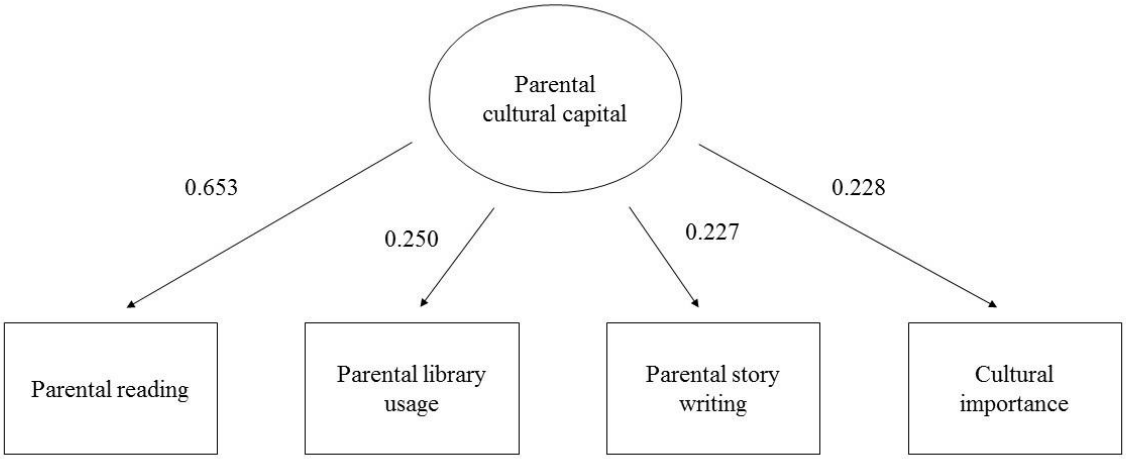


Figure 5. Factor loadings for my unsuccessful proposed parental cultural capital latent construct. Standardised.

Instead of using a parental cultural capital latent construct, I simply used the four parental cultural capital variables that I have previously used. As stated, I modelled for covariance between all of these parental cultural capital variables.

I originally set up a model which used my four formal cultural activities variables and my reading variable to indicate my latent construct for cultural capital. However, while confirmatory factor analysis found no issue with these variables being part of a unified construct, performing diagnostics strongly suggested there was a problem with my model. Exploring the modification indices, I found that the reading component of my cultural capital latent construct was the culprit. Once I reran the model with cultural capital split into two separate components again, the model was far better fitted. I therefore decided to continue with my cultural capital measure split into two components: a latent construct for the formal cultural activities component of cultural capital and an observed variable for the reading component. The observed variables which will be used to model my latent construct of the formal cultural activities component of cultural capital are: the frequency the children visited concert/theatre; museum/art gallery; library; and zoo/aquarium in the previous twelve months. Factor analysis will then be used to determine whether or not these four variables could belong to one single factor.

Unfortunately issues also arose when I tried to explore the longitudinal element of this model. Any time I proposed a pathway between my latent construct for formal cultural activities at age three and age five, my model wouldn't run. Exploring detailed diagnostics within *Mplus* demonstrated that my two latent constructs at age three and five weren't statistically

distinguishable from one another. After discovering that my two separate measures for formal cultural activities (aged 3 and aged 5) were too statistically similar, I decided to create a single construct for formal cultural activities which spanned both time points. This involved creating averaged measures over the two time points for each component of my formal cultural activities construct. I did the same for my reading measure to bring clarity to the model.

When confirmatory factor analysis was performed on my new averaged latent construct for formal cultural activities, the benefits of this single time point seemed evident. For every single measure of formal cultural activities, the averaged measure had a higher factor loading for the latent construct than the individual measures had at their separate time points.

There are a number of ways I will explore the goodness of fit for the model I create. One preliminary goodness of fit indicator for a model is to look at the chi-square value; however, this chi-square test is not suitable for models with a high number of cases (Hooper et al., 2008) and given my model has 4,115 observations, I have decided to look at the other goodness of fit indicators available to me.

One measure of fit that I will use is the root mean squared error of approximation (RMSEA), based on the non-centrality parameter (Kenny, 2014). According to MacCallum, Browne and Sugawara (1996) a value under 0.05 for the RMSEA indicates a good fit while a value under 0.01 indicates an excellent fit. I will also use the comparative fit index (CFI). This is an incremental measure which depends on the average size of the correlations within the data (Kenny, 2014); a value of over 0.9 for the CFI indicates a good fit for the data (Hu and Bentler, 1999). I will also use the standardised root mean square residual (SRMR) to look at the fit of the model. The SRMR is an absolute measure of fit and is defined as "the standardized difference between the observed correlation and the predicted correlation" (Kenny, 2014). Values less than 0.08 for the SRMR are generally considered a good fit (Hu and Bentler, 1999).

Analysis Chapter 3

My third analytical chapter will explore changes in cultural capital over time. It will look at changes over time in the factors associated with the accumulation of cultural capital as well as any potential changes in cultural capital's educational effect over time.

To explore change in cultural omnivorousness and cultural voraciousness, I will compute change scores based on the value of the age four measure minus the age two measure. I will

then run linear regressions on these two variables accounting for the parental cultural capital measures and other background variables.

Because I have more than two time points available for my reading measure, I decided to use a multilevel model to explore change in a child's reading over time. I will also use this statistical method to explore changes in the child's educational ability scores. Specifically I will be using the multilevel model for change (Singer and Willett, 2003) which is also referred to as a mixed-effects model.

Singer and Willett (2003, p. 47) specify that this model must include components at two levels:

> "(1) a level-1 submodel that describes how individuals change over time; and (2) a level-2 submodel that describes how these changes vary across individuals"

This is therefore a two-level model:

$$y_{it} = b_{0t} + bx_{it} + \ldots + u_i + e_{it}$$

In terms of the elements of the equation, y_{it} refers to the outcome variable at time t for individual i, b_{0t} is the average of the outcome variable at time t while x_{it} refers to an explanatory term. These explanatory terms may include interactive terms involving the year to explore time-varying covariates. The final section of the equation involves the random terms u_i and e_{it}. The random term u_i signifies variation that is due to individual differences; because the child has repeated measures on the outcome variable, we presume that these measurements are correlated. The random term e_{it} signifies unmeasured features of the specific individual only at time t. These two random terms are uncorrelated.

Example of this equation for child's reading score:

$$(\text{Child's reading score})_{it} = (\text{Average reading score at age 2}) + (\text{Average reading slope}) + (\text{Explanatory factors}) + \ldots + u_i + e_{it}$$

For my study, the multilevel model for change allows me to see both how individuals' reading and test scores change over time and how these changes vary across individuals according to certain factors. Using this model, I will: predict initial values of the child's reading and test scores using background factors; specify what change in reading and test scores children experience over early childhood; and look at whether this change varies among different children based on specific background factors.

In order to carry out this statistical technique, I had to reformat my data into the long format. Rather than each child's responses falling all within one row in the dataset, each row now represents one time point per child. Each sweep that the child has data for will represent a different row in the dataset. I introduced an age variable which told me the age that children were in that particular sweep. Those time-varying variables which I am using in the analysis had to be renamed so that they had the same name in each sweep.

Before running the full model, Singer and Willett (2003) specify that you should run two preliminary models: the unconditional means model and the unconditional growth model. The unconditional means model does not use any predictors and simply describes and divides the variation in the dependent variable. This model reports the between-person and within-person variance. Within-person variance refers to the scatter of each individual's dependent variable data around his or her mean while between-person variation refers to the scatter of person-specific means around the grand mean of the dependent variable (Singer and Willett, 2003, p. 93). Using the unconditional means model, we can calculate the proportion of total outcome variation that is related to differences between children. To do this we simply divide the between-person variation by the between-person and within-person variation combined.

The unconditional growth model introduces the time variable as a predictor. The constant in this model tells me the average initial score in the dependent variable. The coefficient for the time predictor variable tells me the trajectory of the dependent variable over time. A positive value indicates the dependent variable increases over time while a negative number indicates that it decreases over time.

The meaning of within-person variation changes here and now summarizes the scatter of each person's data "around his or her own linear change trajectory" not his or her person-specific mean (Singer and Willett, 2003, p. 99). We can use the change in within-person variance between the unconditional means model and the unconditional growth model to assess whether the true change trajectory is linear with age; if within-person variance is lower in the second model then it is linear with age (Singer and Willett, 2003, p. 98). The percentage change in within-person variation between the two models indicates how much of the within-person variation in my dependent variable is associated with time.

There are two level-2 variance components in the unconditional growth model: between-person variation around the initial status of the dependent variable and between-person variation around the trajectory of the dependent variable. If I find that these two variance components

are significant then this suggests the benefit of introducing independent variables into the model to try and help explain variation between people both in terms of their initial level of the dependent variable and also their change in the dependent variable over time.

I will measure the fit of the multilevel models using the deviance which is -2 times the log likelihood of the fitted model (Paterson et al., 2013, p. 6). I can examine the effects of adding sections to the model by looking at reductions in the deviance between the two models. In order to compare the deviance of two models: "(1) each must be estimated using the identical data; and (2) one must be *nested* within the other." (Singer and Willett, 2003, p.118). The difference between models can then be tested using a chi-square distribution with degrees of freedom "equal to the number of independent constraints imposed" (Singer and Willett, 2003, pp.118-119) under the null hypothesis of no effect of the new terms being added to the model (Paterson et al., 2013).

4. Childhood cultural capital's predictors and its educational effects

In this chapter I will use linear and logistic regressions[1] to firstly explore what factors influence a child's accumulation of cultural capital and then to explore whether cultural capital has an educational benefit.

Parental cultural capital

Before examining what factors influence a child's accumulation of cultural capital, I will briefly introduce my measures for parental cultural capital. As mentioned previously, parental cultural capital has long been seen as a crucial element for a child's accumulation of cultural capital. It is therefore important to examine my measures for this concept before looking at whether it has any effect on a child's cultural capital levels.

I have four measures for parental cultural capital: parental reading; parental library usage; parental creative writing; and parental cultural importance. You can see the distributions of these variables below:

Table 9. Distribution of parental reading variable.

Number of parents who read for pleasure	***Frequency***	***Percent***
0	1,144	25.4%
1	2,133	47.3%
2	1,235	27.4%
Total	**4,512**	**100%**

[1] Diagnostic tests have been carried out for all regression models which have shown these models are all well fitted. For the specific factors that were examined, see pp.65-66 in the Methods chapter. For output on these diagnostic tests, see p.221 in appendix.

Table 10. Distribution of parental library usage variable.

Parental Library Usage	*Frequency*	*Percent*
Don't use library	2,024	45.3%
Use library sometimes	1,795	40.2%
Use library often	646	14.5%
Total	**4,465**	**100%**

Table 11. Distribution of parental creative writing variable.

Number of parents who write creatively	*Frequency*	*Percent*
0	4,037	89.9%
1	436	9.7%
2	16	0.4%
Total	**4,489**	**100%**

Table 12. Distribution of parental cultural importance variable.

How important parents think cultural activities are for their child	*Frequency*	*Percent*
Not at all important	198	4.4%
Not really important	949	21.1%
Neither important nor unimportant	1,006	22.3%
Quite important	1,525	33.8%
Very important	829	18.4%
Total	**4,507**	**100%**

Nearly three-quarters (74.6%) of children have at least one parent who reads for pleasure, over a half (54.7%) have a parent who uses the library and over a half (52.2%) have parents who think cultural activities are important for their child. Few parents (10.1%) write stories, plays, poems or lyrics as part of their spare time.

I then looked at parental cultural capital's relationship with social class and education level. Both of these factors have been shown to be linked with parental cultural capital (Sullivan, 2001; Lareau, 2002) and it will be interesting to see if the same relationship is found among my variables. To begin with I looked at how the mean of each of my parental cultural capital variables differed by social class category and highest educational qualification – this is the same method Sullivan (2000) followed in her research.

For parental reading, there was a clear positive relationship between both social class and educational qualification with parental reading. This is the result I expected to find. Those parents from higher social classes and those parents with higher educational qualifications were more likely to read for pleasure.

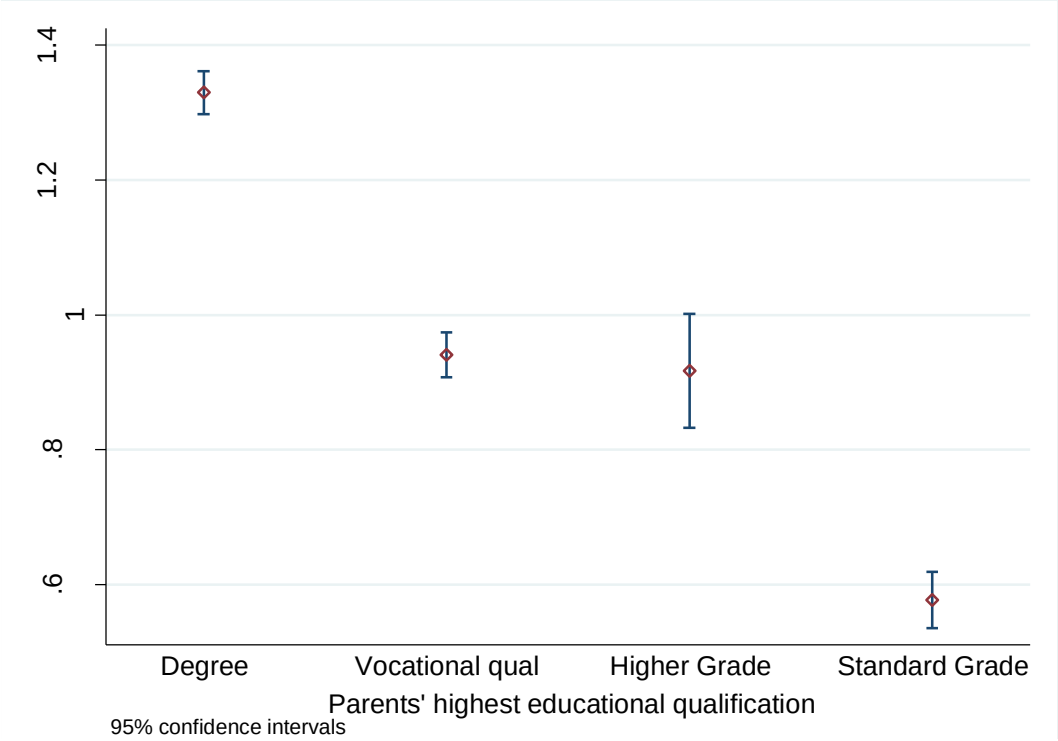


Figure 6. Mean number of parents who read for pleasure by highest parental educational qualification (95% confidence intervals).

You can see from Figure 6 above that there is a clear difference between parents who have a degree and parents who do not have a degree in relation to the average number of parents who read for pleasure. A child who has at least one parent with a degree will be more likely to have parents who read for pleasure. You can see there is no significant difference between parents who have a vocational qualification as their highest educational qualification and parents who

have a Higher Grade. However, there is a noticeable difference between parents who have a Standard Grade or lower as their highest educational qualification and all other parents, with those with a Standard Grade or lower less likely to read for pleasure.

For parental library usage, there was some slight significant differences between social classes while education level was a strong significant predictor. Parental library usage's relationship with social class does not seem very linear, as evidenced by Figure 7 below.

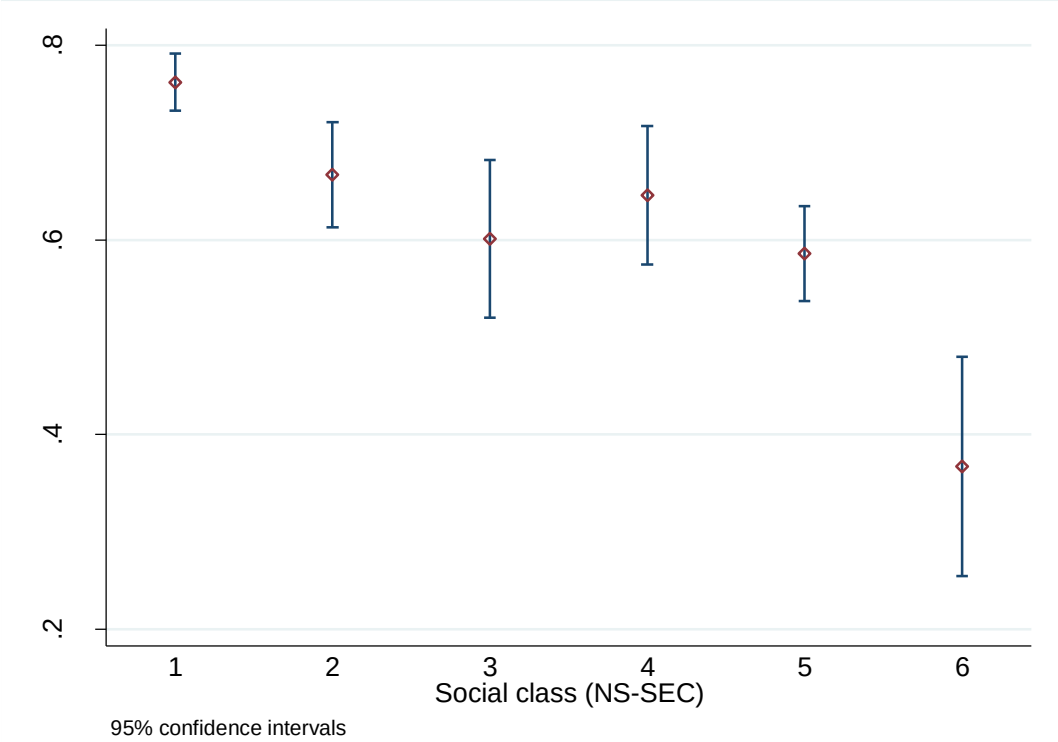


Figure 7. Mean parental library usage response by social class (95% confidence intervals). 1 = Managerial and professional occupations; 2 = Intermediate occupations; 3 = Small employers etc.; 4 = Lower supervisory and technical occupations; 5= Semi-routine and routine occupations; 6 = Never worked.

There is some difference between parents' library usage among those in the highest social class and all other parents, with those in the highest social class category visiting the library most often. However, there is no significant difference between parents from social classes 2-5 in terms of their frequency of library visits. You can see that there is a difference in frequency of library visits for parents in the 'never worked' social class category. These parents are less likely to visit the library than parents from higher social classes. It seems therefore that social class' association with parental library usage is visible only at the extremes of the social class categories. The main differences are seen for people from the highest and lowest social classes.

However, while parental library usage's relationship with social class does not seem so clear, its relationship with educational qualifications seems a lot more straightforward, with a positive relationship showing between a parent's highest educational qualification and the amount they use the library.

For parental cultural importance, both social class and parental cultural capital were significant predictors. For parental creative writing I found no significant association with social class but again education level was a significant predictor. It is notable that parental creative writing was the only measure of parental cultural capital not to be significantly associated with social class. Previous research has suggested that parental cultural capital measures would be associated with both social class and education level (e.g. Sullivan, 2001; Lareau, 2002) and the fact that parental creative writing is not associated with social class already suggests it might not be the most reliable measure of parental cultural.

It is interesting that for all of these parental cultural capital variables, their relationship with education level looks much stronger than it does for social class. I had expected to find strong relationships between the parental cultural capital variables and both social class and education level. I have shown through albeit rather basic analyses that my parental cultural capital variables all have a positive relationship with education level; however, they do not all have a consistently positive relationship with social class.

Children's cultural capital

I now move on to look at the child's cultural capital. I want to look at what factors are associated with a child's accumulation of cultural capital. In particular, I want to look at whether children from more advantaged backgrounds (in terms of parental cultural capital, socio-economic status and other measures) have higher levels of cultural capital.

To explore these questions I performed regressions on my three cultural capital measures: cultural omnivorousness; cultural voraciousness; and reading frequency. For each of these variables I have two time points at which they are measured and so I will run separate regressions for each time point. Diagnostics were carried out on all regressions which showed they were all well fitted models.

I will control for the following background variables in all of the regressions: social class; parental education level; urban-rural classification; parental reading; parental library usage; parental creative writing; how important the parents think cultural activities are for their child;

gender of the child; whether or not the child is a first born; whether or not they have had a sibling born since the survey started; household income; number of books in the house aimed at children; how happy the parents are with their child's access to activities; the Scottish Index of Multiple Deprivation (SIMD) quintile of the area that the child lives; and whether or not the child uses childcare regularly or not.

Cultural omnivorousness

To begin with I looked at what factors are associated with a child's cultural omnivorousness. As discussed earlier, cultural omnivorousness refers to a tendency to engage in a wide variety of different cultural activities (Bennett et al., 2009). My cultural omnivorousness variable measures how many different activities the child participated in. These activities consist of: theatre and concert trips; museum and art gallery trips; library trips; and zoo and aquarium trips. Cultural omnivorousness therefore has a range from 0 to 4.

At age two, the mean number of different activities participated in by children is 1.79 with a median of 2. You can see this distribution in the histogram shown in Figure 8 below.

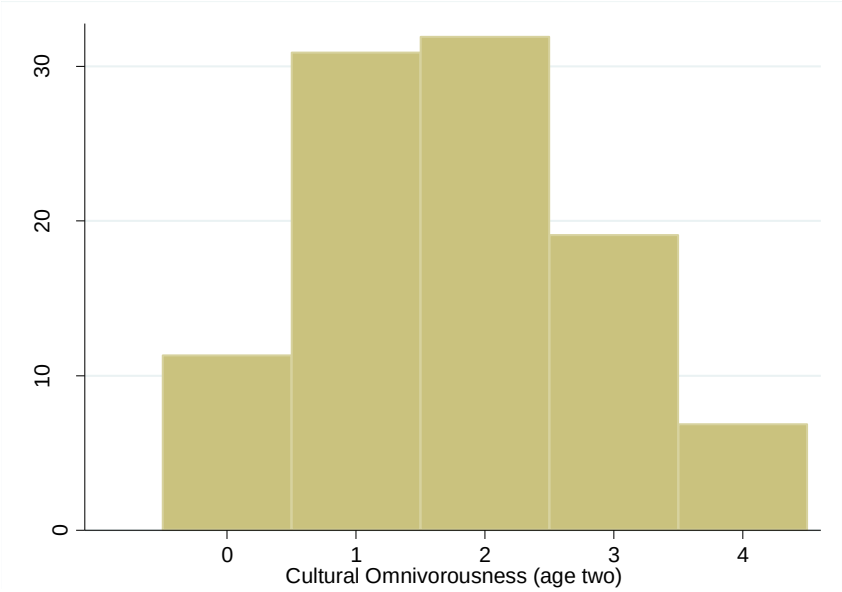


Figure 8. Distribution of cultural omnivorousness at age two (%). N = 4,512

At age four, the mean score for cultural omnivorousness has risen to 2.65 with the median now at 3 different activities. You can see the distribution for this age below in Figure 9.

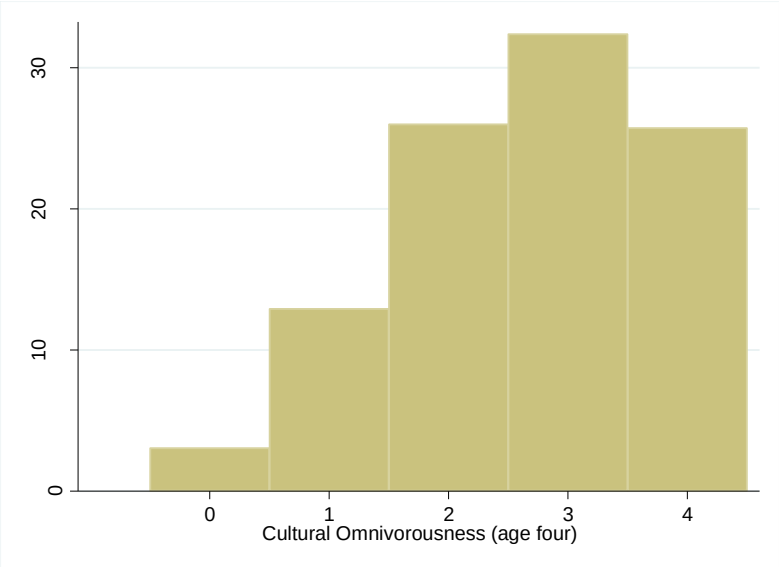


Figure 9. Distribution of cultural omnivorousness at age four (%). N = 3,994

Age Two

To begin with I ran a regression model looking at what factors were associated with a child's cultural omnivorousness at age two. Model 1 displays the results of the model before the parental cultural capital variables were introduced while Model 2 displays the full model including the parental cultural capital variables.

Table 13. Regression analysis of factors predicting cultural omnivorousness (age 2). Excluding (Model 1) and then including (Model 2) parental cultural capital variables as predictors.

	Model 1		**Model 2**	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	-0.072	0.052	-0.033	0.046
3. Small employers etc	-0.216**	0.073	-0.156*	0.065
4. Lower supervisory and technical occupations	-0.230**	0.066	-0.167**	0.059

5. Semi-routine and routine occupations	-0.305***	0.060	-0.199***	0.053
6. Never worked	-0.672***	0.137	-0.345**	0.123
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.358***	0.043	-0.214***	0.038
Higher Grade or equivalent	-0.359***	0.079	-0.230**	0.071
Standard Grade or equivalent	-0.574***	0.062	-0.352***	0.056
Rural-urban classification				
Large urban (*reference*)				
Other urban	-0.218***	0.041	-0.159***	0.036
Small, accessible towns	-0.251***	0.058	-0.271***	0.051
Small remote towns	-0.324**	0.093	-0.268**	0.082
Accessible rural	-0.286***	0.052	-0.172***	0.047
Remote rural	-0.205**	0.079	-0.092	0.070
Female	-0.001	0.032	-0.018	0.028
First born	-0.016	0.039	0.006	0.035
Sibling born	-0.100	0.059	-0.024	0.052
Household income (£1,000)	0.003	0.002	0.003*	0.002
Number of books in the house (age 1)				
0-10	-0.462***	0.049	-0.302***	0.044
11-20	-0.226***	0.047	-0.155***	0.041
21-30	-0.150**	0.051	-0.153**	0.045
30+ *(reference)*				
Access to activities				
Very happy with the range of activities (*reference*)				
Quite happy with the range of activities	-0.350***	0.045	-0.243***	0.040
Would like child to have slightly more access	-0.320***	0.049	-0.207***	0.043
Would like child to have much more access	-0.408***	0.059	-0.205***	0.053

Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	0.008	0.051	0.000	0.045
13.5640 - 21.0436	0.001	0.052	-0.036	0.046
21.0521 - 33.6982	-0.047	0.057	-0.074	0.050
33.7252 -89.0941 – most deprived	-0.104	0.058	-0.143**	0.052
Use childcare (age 2)	0.022	0.037	0.024	0.033
Parental cultural capital (age 2)				
Number of parents who read			0.145***	0.022
Parental library usage				
Don't use library *(reference)*				
Use library sometimes			0.495***	0.032
Use library often			0.819***	0.044
Parental creative writing			0.181***	0.046
Importance of cultural activities				
Not at all important			-0.973***	0.080
Not really important			-0.694***	0.046
Neither important nor unimportant			-0.550***	0.045
Quite important			-0.193***	0.041
Very important *(reference)*				
Constant	2.781***	0.084	2.326***	0.088
R-squared	0.207		0.385	

*N = 3,633; *p* < .05, **p* < .01, ***p* < .001

I found that all of my parental cultural capital variables had a significant association with the child's cultural omnivorousness at age two. The more parents a child had who read, the larger the different number of cultural activities that child engaged in. Each parent a child had who read added 0.15 to the number of different activities a child participated in that year. Similarly, the more often the child's parents visited the library, the higher the child's level of cultural omnivorousness. Having a parent who used the library sometimes compared to a parent who never used the library increased the number of activities a child participated in that year by half an activity while this was even greater for children whose parents used the library regularly

(0.82). Having parents who did creative writing was also associated with a significantly higher number of different cultural activities the child participated in at age two. The more important the child's parents thought cultural activities were for their child, the greater the number of different cultural activities that the child participated in. Children whose parents thought cultural activities were "not at all important" participated in almost one fewer different cultural activity (0.97) in the last twelve months compared to children whose parents thought cultural activities were "very important".

A significant relationship between the family's social class and the cultural omnivorousness of the child was found at age two. Those children from families in a lower social class participate in fewer kinds of cultural activity than children from high social classes. Children from social class 5, semi-routine and routine occupations, participated in 0.2 fewer different types of cultural activity per year compared to children from the highest social class. However, no significant difference is found between the top two social classes: 'managerial and professional occupations' and 'intermediate occupations'. This illustrates that children from families in these two social classes tend to participate in a similar number of different cultural activities at age two. Figure 10 provides a visual representation of the relationship between social class and cultural omnivorousness at age two which the model predicts.

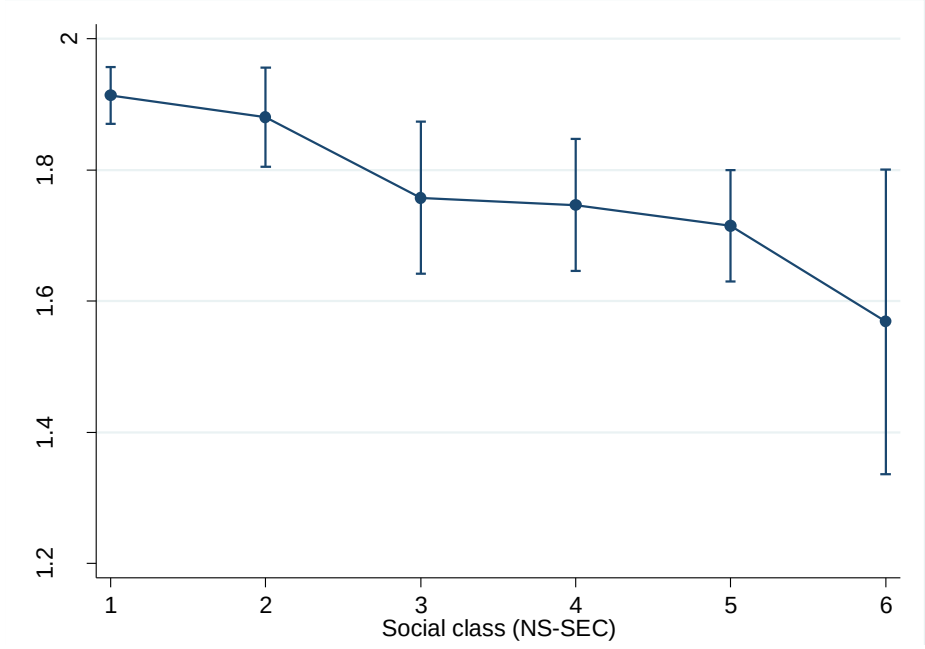


Figure 10. Predictive margins of cultural omnivorousness (age two) for social class (95% confidence intervals). 1 = Managerial and professional occupations; 2 = Intermediate occupations; 3 = Small employers etc.; 4 = Lower supervisory and technical occupations; 5= Semi-routine and routine occupations; 6 = Never worked.

I also found a significant relationship between parental education level and the child's cultural omnivorousness at age two. Those children who have a parent with a degree were associated with having participated in the widest range of cultural activities while all other children were significantly less culturally omnivorous at age two. Children whose parents' highest educational qualification was a Standard Grade or below participated in 0.35 fewer different types of cultural activity per year at age two compared to children whose parents had a degree as their highest educational qualification.

I wanted to explore if geographical barriers might have an effect on a child's cultural capital. My regression of cultural omnivorousness at age two revealed some interesting results in terms of the urban-rural classification of where the child lives. Those children living in a 'large urban' area participated in the highest number of different cultural activities, with children in all the remaining categories except 'remote rural' participating in significantly fewer cultural activities at age two. However, interestingly this relationship is not linear; the more rural the child's location does not mean the fewer activities that child participated in. Instead, we see more of a U shape. The two extremes – 'large urban' and 'remote rural' – are associated with the highest number of different activities (see Figure 11 below). This is different to what I had hypothesised. I had expected a more linear pattern with those in 'remote rural' locations participating in the fewest cultural activities.

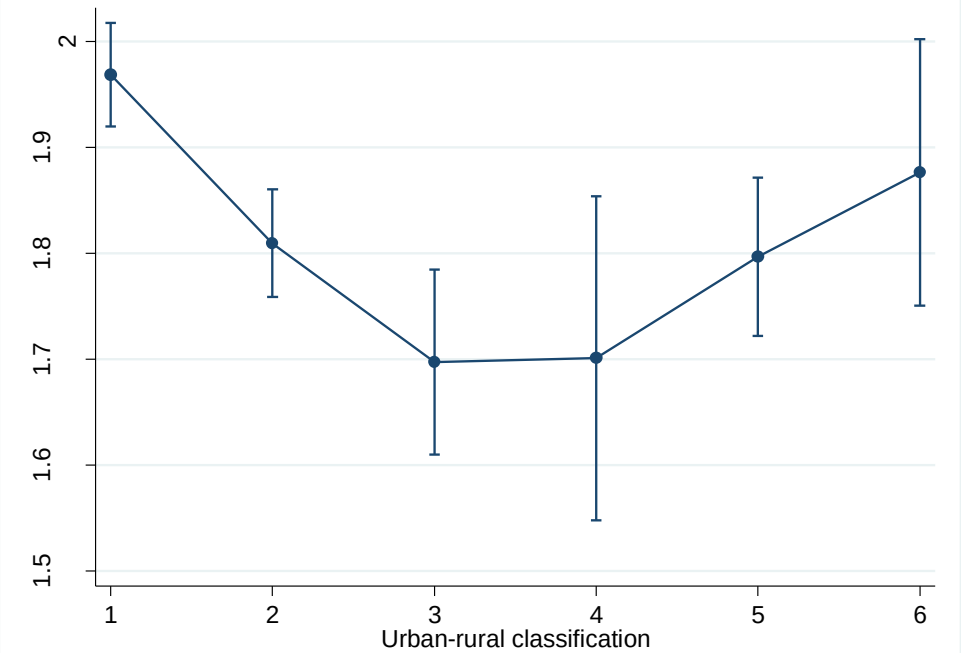


Figure 11. Predictive margins of cultural omnivorousness (age two) for urban-rural classification (95% confidence intervals). 1 = Large urban; 2 = Other urban; 3 = Small accessible towns; 4 = Small remote towns; 5 = Accessible rural; 6 = Remote rural.

There was a significant difference in cultural omnivorousness between children living in areas rated as in the least deprived and most deprived quintiles by the Scottish Index of Multiple Deprivation (SIMD) classification. Children from the most deprived areas participated in significantly less varied cultural activities than those children from the least deprived areas. Another variable I explored which related to access to activities was one which asked parents how happy they were with the activities available to their child. Those children whose parents were 'very happy' with their child's access to activities participated in the largest number of different cultural activities with other children being associated with significantly lower cultural omnivorousness levels. Interestingly, there is little difference between the other three categories: 'quite happy'; 'would like child to have slightly more access'; and 'would like child to have much more access'. What is important for a child's cultural omnivorousness, therefore, is having parents who are very happy with the availability of activities for their child. Of course, it is important to note that my variable measuring how happy parents were with access to activities isn't an entirely accurate proxy for a child's access to cultural activities. It is very subjective and we can easily imagine that a parent high in cultural capital might be less happy with the activities available to their child despite having the same activities available to their child as another parent who was happy with the range of activities.

The issue of access to cultural activities also seems heavily related to social inequalities. Looking at a simple cross-tabulation (Table 14) between access to activities and the level of deprivation of the neighbourhood the child lives in reveals some clear results. For those children living in a neighbourhood classified as one of the least deprived by the SIMD classification, 73.7% of their parents were either 'quite happy' or 'very happy' with the range of activities available to the child. In contrast, only 41.6% of parents living in neighbourhoods classified as in the most deprived quintile were 'quite happy' or 'very happy' with the range of activities available to their child. Similarly, whilst only 5.5% of parents of children in the least deprived quintile wished their child had much more access to activities, this figure was 26% for children from the most deprived neighbourhoods. These results suggest that a child's access to activities can depend heavily on how deprived the area a child lives is. If I find that cultural capital is indeed an educational benefit for any child in possession of it, then unfortunately access to this resource seems to depend heavily upon where you live.

Table 14. Cross-tabulation between how happy parents were with their child's access to activities and the Scottish Index of Multiple Deprivation quintile the child lives in. Percentages in each column are as a proportion of the total children in each column.

Availability of activities	SIMD Quintiles					Total
	1st quintile: Least deprived	2nd quintile	3rd quintile	4th quintile	5th quintile: Most deprived	
Very happy with the range of activities	260 (30.4%)	177 (21.0%)	160 (19.8%)	100 (15.4%)	87 (11.9%)	784 (20.1%)
Quite happy with the range of activities	370 (43.3%)	392 (46.5%)	304 (37.5%)	233 (35.8%)	218 (29.7%)	1,517 (39.0%)
Would like child to have slightly more access	178 (20.8%)	197 (23.4%)	225 (27.8%)	213 (32.8%)	238 (32.4%)	1,051 (27.0%)
Would like child to have much more access	47 (5.5%)	77 (9.1%)	121 (14.9%)	104 (16.0%)	191 (26.0%)	540 (13.9%)
Total	855	843	810	650	734	3,892

Another variable which had no significant effect on cultural omnivorousness at age two was whether or not the child was a first born. I had two competing hypotheses for this variable's relationship with a child's cultural capital: first-born children would have higher cultural capital as parents who had fewer children would have more time and money to spend on cultural activities for that child; or the opposite might be true whereby first borns might be taken to fewer cultural activities at age two than other children as those with older siblings might be taken along to events that their elder siblings were attending. Evidence was found for

neither of these hypotheses in this regression model. Having another sibling born since the survey started was also not significantly associated with a child's cultural omnivorousness levels at age two. I had speculated that having another sibling born would lower the child's levels of cultural participation but no such evidence was found here.

The results from the regression show that the household income of a child's family was significantly associated with a child's level of cultural omnivorousness at age two. The higher the family's household income, the more cultural activities a child participated in. My results also show that the number of books in the household aimed at children is significantly associated with the child's cultural omnivorousness at age two. The more books aimed at children in the household, the greater the number of different activities the child engaged in at age two. Below you can see a graphical representation of this (Figure 12). It seems as though the number of books' effect on age two cultural omnivorousness falls into three main categories with the categories for 11-20 books and 21-30 books having much the same effect. Children who had 0-10 children's books in their home participated in 0.3 fewer different activities compared to children who had more than 30 children's books in the household.

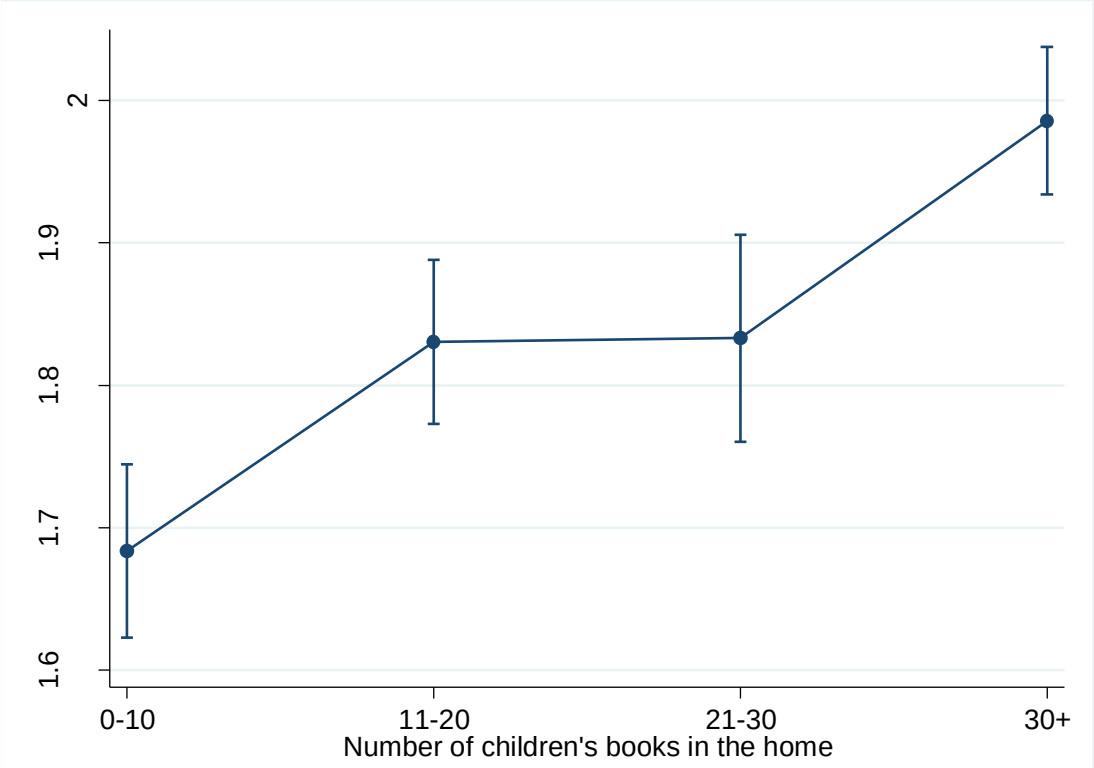


Figure 12. Predictive margins of cultural omnivorousness (age two) for number of children's books in the home at age one (95% confidence intervals).

My regression output showed that there was no significant difference between the number of cultural activities that girls and boys participated in. I also found no significant association between whether the child attended childcare regularly and their cultural omnivorousness level at age two.

The introduction of parental cultural capital into the model increased the R-squared greatly. Before parental cultural capital's introduction, the model had an R-squared value of 0.207, indicating that the model predicted around 21% of the variation in the child's cultural omnivorousness at age two. When I included the parental cultural capital variables, the R-squared of the model increased to 0.385 which shows me that parental cultural capital adds around 17.8% of explanation to the variation of cultural omnivorousness at age two

Despite parental cultural capital adding so much to the explanation of cultural omnivorousness at age two, its addition to the model did not hugely reduce the associations between the rest of the background variables and cultural omnivorousness.

Age Four

I then proceeded to look at what factors were associated with cultural omnivorousness at age four. Again, Model 1 refers to the model before the introduction of parental cultural capital variables while Model 2 is the full model including these variables as predictors.

Table 15. Regression analysis of factors predicting cultural omnivorousness (age 4). Excluding (Model 1) and then including (Model 2) parental cultural capital variables as predictors.

Cultural omnivorousness (age 4)	**Model 1**		**Model 2**	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.000	0.051	0.017	0.050
3. Small employers etc	-0.149*	0.069	-0.087	0.067
4. Lower supervisory and technical occupations	-0.114	0.065	-0.061	0.063

5. Semi-routine and routine occupations	-0.287***	0.060	-0.221***	0.058
6. Never worked	-0.446**	0.146	-0.237	0.142
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.359***	0.042	-0.269***	0.041
Higher Grade or equivalent	-0.336***	0.078	-0.231**	0.076
Standard Grade or equivalent	-0.595***	0.061	-0.446***	0.060
Rural-urban classification				
Large urban (*reference*)				
Other urban	-0.133**	0.039	-0.099*	0.038
Small, accessible towns	-0.048	0.057	-0.056	0.055
Small remote towns	-0.133	0.092	-0.126	0.090
Accessible rural	-0.178**	0.054	-0.095	0.053
Remote rural	-0.169*	0.072	-0.113	0.070
Female	-0.011	0.032	-0.010	0.031
First born	-0.045	0.035	-0.009	0.034
Sibling born	-0.053	0.037	-0.049	0.036
Household income (£1,000)	0.007***	0.002	0.008***	0.002
Number of books in the house (age 3)				
0-10	-0.804***	0.074	-0.642***	0.073
11-20	-0.426***	0.053	-0.339***	0.052
21-30	-0.189***	0.044	-0.137**	0.043
30+ *(reference)*				
Access to activities				
Very happy with the range of activities *(reference)*				
Quite happy with the range of activities	-0.087*	0.043	-0.034	0.042
Would like child to have slightly more access	-0.177***	0.047	-0.115*	0.046

Would like child to have much more access	-0.201**	0.058	-0.101	0.057
Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	-0.065	0.049	-0.079	0.048
13.5640 - 21.0436	-0.083	0.051	-0.105*	0.050
21.0521 - 33.6982	-0.180**	0.055	-0.210***	0.054
33.7252 -89.0941 – most deprived	-0.142*	0.057	-0.179**	0.055
Use childcare (age 4)	0.077*	0.034	0.086*	0.033
Parental cultural capital (age 2)				
Number of parents who read			0.150***	0.024
Parental library usage				
Don't use library *(reference)*				
Use library sometimes			0.290***	0.034
Use library often			0.459***	0.047
Parental creative writing			0.079	0.049
Importance of cultural activities				
Not at all important			-0.403***	0.083
Not really important			-0.315***	0.050
Neither important nor unimportant			-0.276***	0.049
Quite important			-0.061	0.044
Very important *(reference)*				
Constant	3.210***	0.083	2.816***	0.096
R-Squared	0.245		0.302	

*N = 3,560; *p* < .05, **p* < .01, ***p* < .001

Parental cultural capital was still significantly associated with cultural omnivorousness at age four. However, there is one key difference at age four compared to age two. Whilst parental reading, parental library usage and parental cultural importance are still significant and positive predictors of the child's cultural omnivorousness, parental creative writing is no longer a significant factor at age four. However, the effect sizes of parental cultural capital weren't as

great at age four. Children whose parents used the library sometimes participated in 0.29 more different cultural activities than children whose parents never used the library while those children whose parents used the library regularly participated in 0.46 more cultural activities. Similarly, how important parents thought cultural activities were for their child had a lower effect size at age four. Children whose parents thought cultural activities were "not at all important" participated in 0.4 fewer different cultural activities than children whose parents thought cultural activities were "very important".

One very interesting change between the two ages was the impact of childcare on cultural omnivorousness. Whilst at age two, the child's use of childcare had no significant effect on the different number of activities they participated in, at age four childcare did have a significant effect. Children who used childcare regularly participated in 0.09 more different cultural activities than those children who were not in some form of regular childcare. This is a very interesting result and hints that there could be something about childcare that promotes the accumulation of cultural capital.

After seeing that childcare was associated with higher cultural omnivorousness at age four, I decided to use interaction effects to determine whether childcare's effect on cultural omnivorousness might be associated with parental cultural capital. Childcare has been mooted in the past as a means of compensating for low parental cultural capital (Esping-Andersen, 2009; Sylva et al., 2011). I ran interaction effects between cultural omnivorousness at age four and all of my parental cultural capital variables. I found that for the interaction between cultural omnivorousness and parental reading there was a significant negative effect: childcare's positive association with a child's cultural omnivorousness was felt more by children with fewer parents who read (Table 16).

Table 16. Interaction effect between regular childcare usage and parental reading for cultural omnivorousness (age four).

	Coef.	**Std. Err.**
Childcare*Parental reading	-0.132**	.045

*$p < .05$, **$p < .01$, ***$p < .001$

Below in Figure 13 you can see a visual representation of this interaction effect.

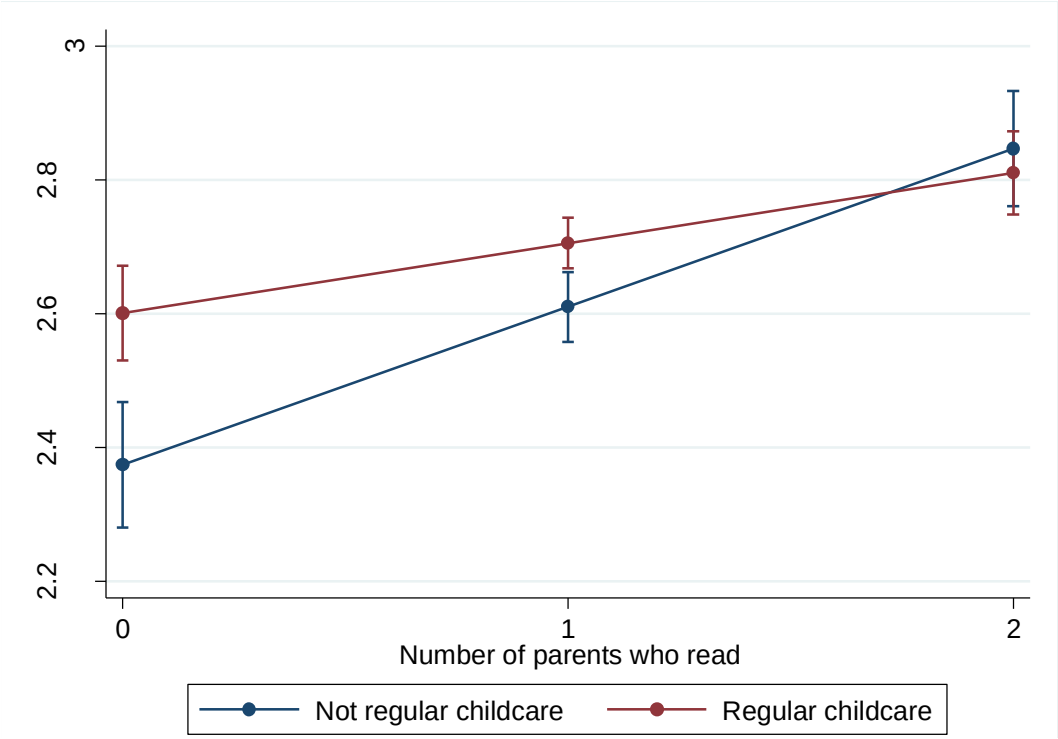


Figure 13. Predictive margins of cultural omnivorousness (age four) for parental reading by regular childcare usage (age four).

Among children with no parents who read for pleasure, the difference between children who use childcare regularly and those who don't in their cultural omnivorousness at age four was greater. Among children where both parents read for pleasure, there was no significant difference in children's cultural omnivorousness at age four depending on their childcare usage.

It may well be that children are introduced to new cultural activities by childcare-based trips which is why they see an increase in cultural omnivorousness. I briefly explored whether this might be the case by looking at variables which detail whether the last time a child was taken to a particular activity was by a member of childcare staff.

Of those children who were taken to the library by childcare staff at age four, more than half (56%) had not visited the library at age two. In contrast, among the other children who visited the library at the age of four, 64% of them also visited the library when they were two. Nearly ten percent of children were taken to a concert or the theatre at age four by a member of childcare staff. Among those children who were taken by childcare staff, 78% had not been to the theatre or a concert at age two. In comparison, for the other children who went to the theatre or a concert at age four, 66% had not been on a similar trip at age two. For the children who

were last taken to the art gallery or museum by childcare staff, 66% of them had not visited an art gallery or museum at age two. In contrast, among the other children who visited an art gallery or museum at age four, 47% hadn't visited either at age two. Of those children who were last taken to the zoo or aquarium by a member of childcare staff, only 30% had not been at age two. This result does not fit especially well with my other results which hint that childcare might open up cultural activities for children. However, when looking at the other children who were taken to the zoo or aquarium at age four, only 18% had not been taken at age two. It seems therefore that regular childcare usage's positive association with cultural omnivorousness at age four may well be linked with the idea that childcare can introduce children to new cultural activities.

Another interesting difference between my regressions on cultural omnivorousness at age two and at age four is the effect of social class. Whilst there was a largely significant association between social class and cultural omnivorousness at age two, at age four this association is not as strong. Compared to being a child from the highest social class 'managerial and professional occupations', only children from the fifth highest social class 'semi-routine and routine occupations' were significantly different in the number of different cultural activities they participated in at age four. For all the other children, there was no significant difference in their cultural omnivorousness at age four compared to a child from the highest social class.

In contrast, while household income remains a significant predictor of cultural omnivorousness at age four, its effect increases greatly between the two sweeps. At age two, while household income did have a significant, positive association with cultural omnivorousness, this was only significant at the 5% level and indeed quite close to passing this threshold. At age four, household income's effect on cultural omnivorousness is significant at the 0.1% level. For every extra £10,000 in household income, the number of different cultural activities a child will participate in increases by 0.08. If household income is excluded from the regression then the effect of social class is much more pronounced, hinting that the decline in the effect of social class at age four is in part to do with the increased role of household income.

I therefore explored whether household income or the parents' social class might have changed between these two years. Looking at the change in household social class, I found very little support for this. Nearly 90% of households had the same household social class in the two sweeps. Of those who did change social class, approximately half increased their social class and half decreased their social class. I also explored changes in the father and mother's social

classes individually but found similarly unsupportive results. I moved on to look at whether there were any significant changes in equivalised household income between the two sweeps but found that while families had on average higher household income at age four, this was not a universal change with a third of families experiencing decreases. The fact that household income and social class did not seem to change much between these sweeps suggests it is more likely that there is a difference in the mechanics of the accumulation of cultural omnivorousness between these two ages where a family's income is more important at age four than at age two.

The urban-rural classification of where the child lives also has a different relationship with the number of activities the child participated in at age four compared to my age two model. At age four, the only significantly different category to children living in 'large urban' areas is 'other urban' with children from these locations participating in a significantly lower number of different cultural activities. In contrast, at age two 'remote rural' was the only category which was *not* significantly different from 'large urban'.

Being female, being a first born or having a sibling born between sweeps are all still non-significant at age four. Parental education level, the number of children's books in the household, household income, the level of deprivation in the area the child lives and the parents' happiness with their child's access to activities were still all significantly associated with cultural omnivorousness at age four.

Cultural voraciousness

I now move on to look at what factors influence a child's cultural voraciousness. As I have stated earlier, cultural voraciousness can be thought of as the frequency with which individuals participate in cultural activities, with a culturally voracious individual participating very frequently (Katz-Gerro and Sullivan, 2007).

My measure for cultural voraciousness is a scale from 0-20 which is a combined measure of how often children participate in the cultural activities measured in the survey. At age two, the mean score for cultural voraciousness is 3.5 while at age four, the mean cultural voraciousness score is 5.1. The distribution of cultural voraciousness at age four seems to be remarkably normally distributed. Below you can see the distribution of cultural voraciousness at age two and then at age four.

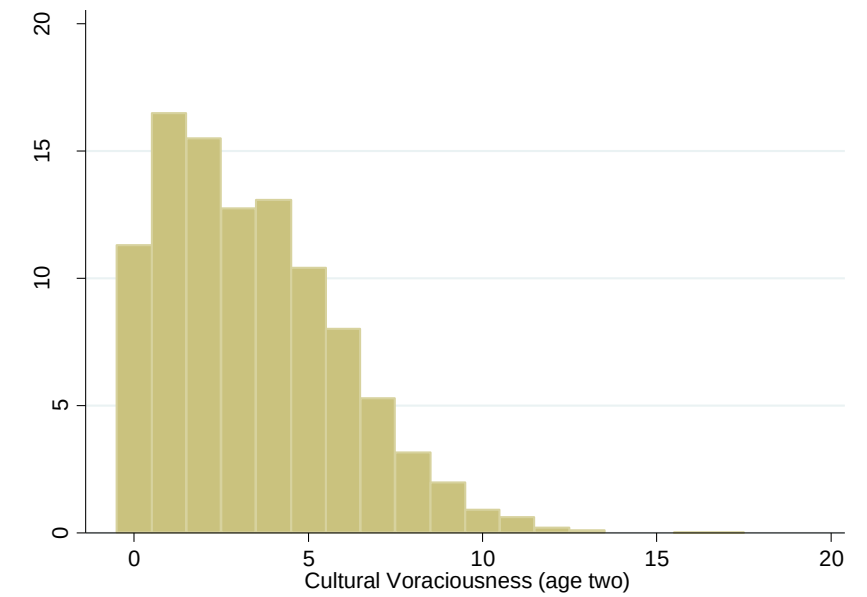


Figure 14. Distribution of cultural voraciousness at age two (%). N = 4,508

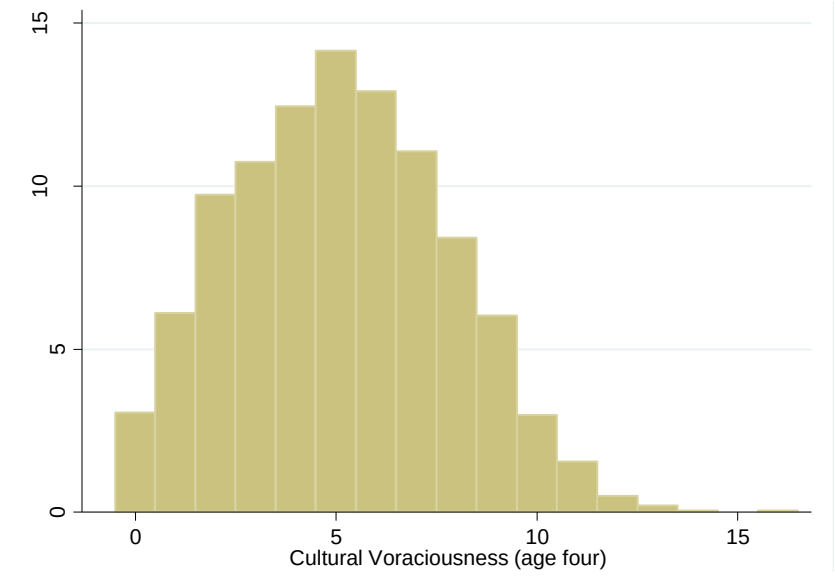


Figure 15. Distribution of cultural voraciousness at age four (%). N = 3,994

I then ran regressions on what factors were associated with cultural voraciousness at age two and age four. These models include both parental cultural capital and my background measures.

Table 17. Regression analysis of factors predicting cultural voraciousness at age two and age four.[2]

Cultural voraciousness	Age 2		Age 4	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	-0.035	0.108	0.040	0.125
3. Small employers etc	-0.173	0.151	0.023	0.169
4. Lower supervisory and technical occupations	-0.245	0.138	0.006	0.159
5. Semi-routine and routine occupations	-0.324*	0.125	-0.306*	0.146
6. Never worked	-0.463	0.289	0.003	0.358
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.511***	0.090	-0.777***	0.103
Higher Grade or equivalent	-0.580***	0.165	-0.792***	0.190
Standard Grade or equivalent	-0.742***	0.131	-0.967***	0.151
Number of parents who read	0.307***	0.051	0.338***	0.059
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	1.057***	0.074	0.825***	0.085
Use library often	2.808***	0.103	1.676***	0.119
Parental creative writing	0.461***	0.107	0.400**	0.123
Importance of cultural activities				
Not at all important	-2.042***	0.188	-1.277***	0.209
Not really important	-1.497***	0.108	-1.111***	0.125
Neither important nor unimportant	-1.160***	0.106	-0.958***	0.123
Quite important	-0.541***	0.096	-0.414***	0.111

[2] For time-varying predictors, see Table 6 on pp. 63-64

Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	-0.422***	0.084	-0.233*	0.096
Small, accessible towns	-0.679***	0.120	-0.231	0.139
Small remote towns	-0.853***	0.193	-0.285	0.225
Accessible rural	-0.265*	0.109	-0.137	0.133
Remote rural	-0.273	0.164	-0.406*	0.175
Female	0.019	0.067	-0.028	0.077
First born	0.199*	0.082	0.269**	0.085
Sibling born	-0.068	0.122	-0.211*	0.090
Household income (£1,000)	0.006	0.004	0.012**	0.004
Number of books in the house				
0-10	-0.631***	0.103	-1.367***	0.183
11-20	-0.331**	0.097	-0.902***	0.130
21-30	-0.305**	0.106	-0.318**	0.108
30+ *(reference)*				
Access to activities				
Very happy with the range of activities (*reference*)				
Quite happy with the range of activities	-0.601***	0.093	-0.238*	0.106
Would like child to have slightly more access	-0.518***	0.101	-0.263*	0.116
Would like child to have much more access	-0.562***	0.124	-0.286*	0.142
Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	-0.043	0.105	-0.238*	0.120
13.5640 - 21.0436	-0.135	0.108	-0.234	0.125
21.0521 - 33.6982	-0.133	0.117	-0.446**	0.135
33.7252 -89.0941 – most deprived	-0.266*	0.121	-0.363**	0.139

Use childcare	-0.019	0.078	0.159	0.084
Constant	4.434***	0.207	5.725***	0.240
R-Squared	0.399		0.288	
N	3,632		3,560	

*p < .05, **p < .01, ***p < .001Parental cultural capital was significantly associated with a child's cultural voraciousness at age two and age four. All of the parental cultural capital variables were significantly associated with cultural voraciousness at both ages. The higher a child's parental cultural capital levels, the higher their cultural voraciousness.

Social class does not have a particularly strong relationship with cultural voraciousness at age two or at age four. Those from the 'semi-routine and routine occupations' class participate less often in cultural activities compared to those from the 'managerial and professional occupations' class but that is the only significant difference between social classes. While this mirrors what I found for cultural omnivorousness at age four, it is different to what I found for cultural omnivorousness at age two.

Parental education level is significantly and positively associated with cultural voraciousness at age two and age four. Children with degree-educated parents participated significantly more often in cultural activities than other children.

Household income had differing effects on cultural voraciousness at age two and age four. Household income had no significant association with cultural voraciousness at age two but was a significant and positive predictor at age four. This is a similar result to what I found for cultural omnivorousness: household income's effect is much more pronounced at age four than at age two.

It is very interesting that at age two, neither social class nor household income have a great effect on cultural voraciousness. However, it is worth pointing out that if social class is excluded from the regression then household income is significant. Similarly, if I remove household income from the regression then social class has a much more pronounced effect.

I found that being a first-born child has a significant and positive effect on a child's cultural voraciousness at age two and age four; first-born children tend to engage more frequently in cultural activities. This is in contrast to my results for cultural omnivorousness where being a first born had no significant effect in either sweep. These results seem to suggest that being a first born has a positive impact on the frequency with which children participate in cultural

activities at both ages but has no significant impact on the number of different activities the child participates in. Having a sibling born since the survey started had no significant effect on cultural voraciousness at age two but did have a significant negative effect on cultural voraciousness at age four. Having a sibling born since the survey began was not a significant predictor in either of the cultural omnivorousness models.

I decided to try and explore these results around siblings further. I ran my cultural voraciousness models again but also included interaction terms between household income and my first born and sibling variables. I had earlier suggested that additional siblings might negatively impact on a child's cultural capital due to the increased cost of taking more children to activities. I therefore wanted to explore whether there was a relationship between the negative effect on cultural voraciousness that additional siblings bring and a family's income. No significant interaction terms were found between having a sibling born and income. However, I found that for cultural voraciousness at age two, my interaction term between being a first born and household income was negative and significantly associated with cultural voraciousness (Table 18).

Table 18. Interaction effect between first-born children and household income for cultural voraciousness (age two).

	Coef.	**Std. Err.**
First Born*Household Income	-0.019**	.005

*$p < .05$, **$p < .01$, ***$p < .001$

This means that the effect of being a first born on cultural voraciousness is greater for those from lower household incomes. In Figure 16 below you can see a graphical representation of this interaction effect:

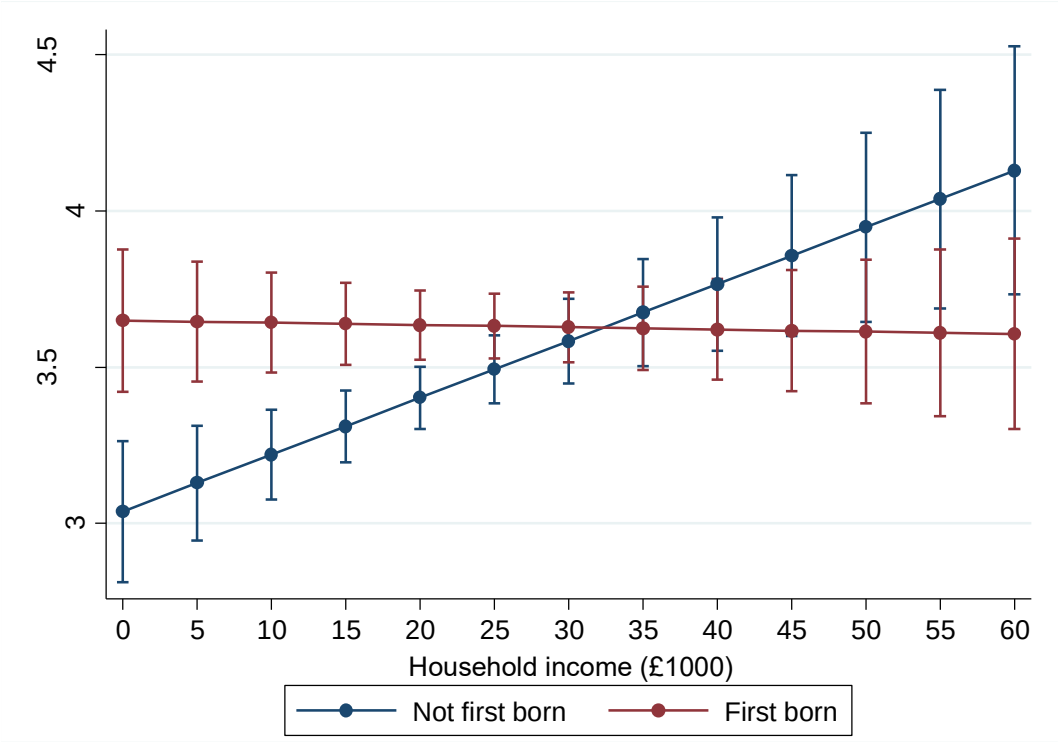


Figure 16. Predictive margins of cultural voraciousness (age two) for household income (£1,000) by whether the child is a first born.

For children with an equivalised household income under £30,000, being a first born has a greater effect on their cultural voraciousness at age two. This result suggests that the positive association between first-borns and cultural voraciousness at age two may very well be down to the financial barriers to cultural activities that extra children bring.

The number of children's books in the household has a significant and positive effect on cultural voraciousness at both ages; the greater the number of books in the house, the more frequently the child engages in cultural activities.

The urban-rural classification of where the child lived, the level of deprivation of where the child lived and parents' happiness with access to activities were also all significantly associated with cultural voraciousness at age two and age four. Children from more urban locations, whose parents were happier with their access to activities and who lived in a less deprived area had higher cultural voraciousness.

The gender of the child and whether they used childcare regularly or not were not significantly associated with cultural voraciousness at age two or age four.

At age two, the introduction of parental cultural capital into the model more than doubles the R-squared value from 18.5% to 39.9%, illustrating its effect on a child's cultural voraciousness at age two. The inclusion of these parental cultural capital variables in the age four model has less of a dramatic difference on the R-squared than it did at age two; the R-squared value rises from 19.5% to 28.8% when I include the parental cultural capital variables.

Reading

After exploring which factors were associated with a child's cultural omnivorousness and voraciousness, I now move on to look at which factors were associated with a child's reading.

My measures for reading focus on whether or not a child read every day. The first measure looks at reading between the ages of 2 and 3 while the second focuses on reading between the ages of 4 and 5. The distribution of these two variables are shown below. It is noticeable how large a proportion of children fall into the reading daily category.

Table 19. Distribution of whether children read daily between age two and age three.

Reading (age 2-3)	***Frequency***	***Percent***
Less than once a day	1,200	29.2%
Daily	2,917	70.9%
Total	**4,117**	**100%**

Table 20. Distribution of whether children read daily between age four and age five.

Reading (age 4-5)	***Frequency***	***Percent***
Less than once a day	1,171	31.3%
Daily	2,565	68.7%
Total	**3,736**	**100%**

Because I am using binary variables for my reading measure (read every day or not), I will be employing logistic regression analysis as this is best suited to binary dependent variables. I decided to use the same explanatory factors when looking at the child's reading as I did for cultural omnivorousness and voraciousness with one exception; I excluded parents' happiness

with the availability of activities for their children. The regression results below detail what factors were associated with the chances a child read every day between age 2-3 and then between age 4-5.

Table 21. Logistic regression analysis of factors predicting child's reading at age 2-3 and age 4-5.[3]

Reading	Age 2-3		Age 4-5	
	Odds Ratio	**Std. Err.**	**Odds Ratio**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.918	0.118	0.874	0.114
3. Small employers etc	0.809	0.140	1.029	0.182
4. Lower supervisory and technical occupations	0.943	0.148	0.793	0.128
5. Semi-routine and routine occupations	0.858	0.122	0.766	0.114
6. Never worked	0.553	0.177	1.086	0.392
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	0.746**	0.084	0.657***	0.074
Higher Grade or equivalent	0.608**	0.115	0.731	0.145
Standard Grade or equivalent	0.546***	0.083	0.526***	0.082
Number of parents who read	1.215**	0.076	1.327***	0.084
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	1.089	0.096	1.180	0.106
Use library often	2.485***	0.363	2.016***	0.283
Parental creative writing	1.306	0.188	1.132	0.162
Importance of cultural activities				

[3] For time-varying predictors, see Table 6 on pp. 63-64

Not at all important	0.709	0.154	0.703	0.155
Not really important	0.733*	0.098	0.875	0.118
Neither important nor unimportant	0.664**	0.089	0.878	0.117
Quite important	0.878	0.110	0.994	0.123
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	1.027	0.105	0.984	0.102
Small, accessible towns	1.000	0.146	0.934	0.139
Small remote towns	1.223	0.294	1.316	0.334
Accessible rural	1.304	0.182	1.282	0.190
Remote rural	1.190	0.245	1.001	0.186
Female	1.599***	0.132	2.199***	0.186
First born	2.297***	0.232	2.376***	0.222
Sibling born	1.034	0.155	0.943	0.093
Household income (£1,000)	1.019***	0.005	1.007	0.005
Number of books in the house				
0-10	0.432***	0.053	0.204***	0.040
11-20	0.818	0.098	0.486***	0.063
21-30	0.857	0.113	0.486***	0.053
30+ *(reference)*				
Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	0.925	0.127	0.852	0.115
13.5640 - 21.0436	1.110	0.156	0.889	0.123
21.0521 - 33.6982	0.834	0.120	0.776	0.112
33.7252 -89.0941 – most deprived	0.700*	0.102	0.761	0.113
Use childcare	1.099	0.101	0.827*	0.076
Constant	1.497	0.366	1.607	0.397
Pseudo R-squared	0.135		0.152	
N	3,553		3,388	

*$p < .05$, **$p < .01$, ***$p < .001$

Age 2-3

Several of the parental cultural capital variables had significant associations with whether or not the child read every day at age two and age three. Having parents who read for pleasure was significantly associated with a higher likelihood that a child read every day. Each additional parent a child had who read for pleasure was associated with a 21.5% increase in the odds of being read to every day between age two and age three. Parental library usage was also significantly associated with the child's reading at age two and three. Those children whose parents used the library often were significantly more likely to read every day than those children whose parents don't use the library; indeed, their odds of being read to every day were more than double children whose parents never used the library. However, there was no significant difference between those who don't use the library and those who use the library sometimes, suggesting regular parental library usage is important. There was no significant association between having parents who do creative writing and the child reading every day. How important parents classified cultural activities was also significantly associated with the child's reading at age two and three; compared to children whose parents thought cultural activities were 'very important', children whose parents thought they were 'not really important' or 'neither important nor unimportant' were significantly less likely to read every day.

Children who lived in a house with between zero and ten books aimed at children were significantly less likely to read every day than children who had over thirty children's books in the house; these children were associated with a 56% reduction in the odds of being read to every day compared to children who had 30 or more children's books in the house. However, there was no significant difference between children who had over thirty children's books in the household and children who had either 11-20 or 21-30 children's books in their house.

Interestingly, I found that social class had no significant association with whether a child read every day or not at age two and three. Parental education level did however have a significant association with how often a child read at age two and three. Compared to children who had a parent with a degree, all other children were significantly less likely to read every day. Having parents whose highest educational qualification was a Standard Grade or lower was associated with a 45% reduction in the odds of being read to every day compared to children whose parents had a degree.

Whether the child was a first born, the sex of the child, household income and the level of deprivation in the area the child lived were all significantly associated with the child being more likely to read every day at age two and age three. Children who were first borns, were female, had higher household income and lived in less deprived areas were more likely to read every day. Girls were 60% more likely to be read to every day between age two and three than boys while the odds of first borns being read to every day was more than double those who weren't first borns.

The urban-rural classification of where the child lived, whether the child had a sibling born since the survey started and whether the child used childcare regularly all had no significant association with whether the child read every day or not.

Age 4-5

There were a number of key differences between those factors which predicted how likely a child read every day between 2-3 years old and those for between 4-5 years old.

The role of parental cultural capital on a child's reading changed slightly between age 2-3 and age 4-5. While parental reading and parental library usage were still significant predictors and parental creative writing was still non-significant, at age 4-5 how important parents thought cultural activities were was no longer significantly associated with whether a child read every day or not.

One very interesting change between the two models concerns childcare usage's relationship with reading. Children who used childcare regularly were significantly less likely to read every day at age four and five than those children who were not using regular childcare; children who used childcare regularly experienced a 17% reduction in the odds of being read to every day. Interestingly, household income had no significant association with whether or not a child read every day. This is in contrast to age two and age three where increased household income was significantly associated (at the 0.001 level) with a greater likelihood of reading every day. Unlike the age two and three model, at age four and five the level of deprivation in the area the child lives had no significant association with whether or not the child read every day.

Another interesting difference between the two models relates to the number of children's books in the household. While at age two and three, there was only a significant difference between those children with 0-10 books in the household and children with over thirty books, at age four and five there is now a significant difference between children with over thirty

children's books in their household and all other children. Those children with over thirty books aimed at children in their home are significantly more likely to read every day than children with thirty or fewer children's books.

The family's social class, the urban-rural classification of where the child lives and whether the child had a sibling born since the survey started were all still not significantly associated with whether a child read every day. Parental education level, sex of the child and whether the child was a first born were all still significantly associated with whether the child read every day at age 4-5.

Because I saw the effects of household income and deprivation level decrease at age four-five and the effects of the number of books increase, I decided to explore whether these were linked in any way. I ran the same regression but removed the variable for number of children's books in the household from the model. I found that this resulted in social class, household income and level of deprivation becoming significant predictors of a child's reading despite none of them being significant after the inclusion of the number of children's books into the model. This suggests that the number of children's books in the household might be mediating the effects on a child's reading of these three variables. Below you can see the regression output for these variables, with (Model 1) and without (Model 2) the number of children's books in the model.

Table 22. Logistic regression analysis of factors predicting Reading (age 4-5). Including (Model 1) and then excluding (Model 2) number of children's books in the home (Model 1) as a predictor. Ouput only included for social class, household income, number of children's books in the household and SIMD.

Reading (age 4-5)	Model 1		Model 2	
	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.874	0.114	0.865	0.111
3. Small employers etc	1.029	0.182	0.983	0.169
4. Lower supervisory and technical occupations	0.793	0.128	0.776	0.122

5. Semi-routine and routine occupations	0.766	0.114	0.694*	0.100
6. Never worked	1.086	0.392	0.820	0.280
Household income (£1,000)	1.007	0.005	1.010*	0.005
Number of books in the house (age 3)				
0-10	0.204***	0.040		
11-20	0.486***	0.063		
21-30	0.486***	0.053		
30+ *(reference)*				
Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	0.852	0.115	0.853	0.113
13.5640 - 21.0436	0.889	0.123	0.905	0.124
21.0521 - 33.6982	0.776	0.112	0.730*	0.104
33.7252 -89.0941 – most deprived	0.761	0.113	0.716*	0.104
Constant	1.607	0.397	1.132	0.272
Pseudo R-squared	0.152		0.126	
N	3,388		3,389	

**p < .05, **p < .01, ***p < .001*

Discussion

A key conclusion we might draw from these results is that the accumulation of cultural capital in early childhood is very unequal with children from disadvantaged backgrounds significantly more likely to participate less frequently and in fewer cultural activities. Across a whole range of factors – such as social class, parental education level, area deprivation, household income, cultural resources and parental cultural capital – those children who were most disadvantaged accumulated the least cultural capital. They had lower levels of cultural omnivorousness and cultural voraciousness and were less likely to read as frequently.

One of the key elements of the accumulation of cultural capital in early childhood which I wanted to explore was the role of parental cultural capital. Parental cultural capital is supposedly crucial in the accumulation of cultural capital at an early age (Bourdieu, 1986; Nagel, 2010). My results tend to support this view with my parental cultural capital variables having a consistent, positive, and significant effect on the child's cultural capital. While my

parental cultural capital variables are by no means a perfect indicator of the concept, I still believe my results provide strong evidence that a key element in the accumulation of cultural capital in early childhood is parental cultural capital. Children with parents high in cultural capital tend to feel the advantages of this in their own accumulation of cultural capital. The fact that these parental cultural capital variables were associated with the child's initial levels of cultural capital support the view that the transmission of parental cultural capital begins very early. However, while parental cultural capital did have a significant relationship with a child's cultural omnivorousness, cultural voraciousness and reading, this was certainly not the only significant factor. This means there are other pathways through which children can accumulate cultural capital in early childhood outside of the intergenerational transmission of cultural capital.

Social class had a mixed relationship with a child's cultural capital. Social class was significantly associated with cultural omnivorousness and voraciousness at age two and age four but had no significant association with a child's reading. These results provide some support therefore for the idea that children from higher social classes accumulate more cultural capital than those from lower social classes. However, the results could certainly have been more resounding. Indeed, my results would tend to indicate that social class' effect on cultural omnivorousness and voraciousness is largely felt by children from the very low social classes, with children from the 'semi-routine and routine occupations' class shown to be significantly disadvantaged in all regressions. However, the fact that social class is still significant at all in my regressions on a child's cultural capital after controlling for parental cultural capital is an important finding which differs from that of Sullivan (2001) who found that parental cultural capital mediated social class' effects on a child's cultural capital. The fact that social class had differing relationships with the reading and formal activities components of cultural capital suggests that there are different mechanisms behind the accumulation of these two different elements of cultural capital in early childhood.

One of the most consistent predictors of a child's cultural capital in my regression models was the child's parents' education level. Parental education level has a strong, significant effect on the child's cultural omnivorousness, cultural voraciousness and reading in all of the models. This is strong evidence that the education level of parents has a substantial impact on the cultural capital levels of children and demonstrates that children from more advantaged backgrounds tend to have higher levels of cultural capital in early childhood.

I wanted to look at how geographical barriers might affect a child's accumulation of cultural capital. I had hypothesised that children living in more urban areas might have access to more cultural activities given that cultural institutions such as museums, art galleries, theatres and concert venues are found more frequently in urban areas. My results did provide some support for the idea that living in a more urban area is associated with wider and more frequent cultural participation. I found that children living in 'large urban' areas participated more widely and frequently in cultural activities. There is greater evidence for the effects of geographical barriers to cultural participation at age two where for both cultural omnivorousness and cultural voraciousness, children from almost all urban-rural classifications scored significantly lower than children from 'large urban' areas. Interestingly, however, I found there was no significant relationship between urban-rural classification and whether the child read every day. This result seems to make sense with my original justification for including urban-rural classification in the children's cultural capital models. The amount a child reads or is read to does not rely to the same extent on access to such institutions which my results seems to back up.

Another way that I tried to look at the issue of access to cultural activities was through a variable which asked parents how happy they were with the range of activities available to their child in the area. I found that the happier parents were with their child's access to activities, the greater that child's cultural omnivorousness and voraciousness. I believe this result supports the view that providing more access to cultural activities for young children would help to increase cultural participation in early childhood. With over 40% of parents in the survey wishing their children had access to more activities, this is clearly an issue.

The deprivation level of where the child lives was another factor which was significantly associated with a child's cultural capital. Children from more deprived areas tended to have lower cultural omnivorousness and voraciousness at age two and age four and were less likely to read every day between age two and age three. I have already suggested that one reason for this might be to do with access to cultural activities, with parents of children in the most deprived areas seeming more likely to be unhappy with the range of cultural activities available to their child. I will explore this link in further detail in the following chapter. This result again highlights how children from more disadvantaged backgrounds have more barriers to cultural capital accumulation in early childhood.

I found interestingly mixed results for the effects of gender on a child's cultural capital. While there was no significant difference between boys and girls in terms of their cultural

voraciousness or omnivorousness, girls were significantly more likely to read every day than boys. My result around reading is in fitting with the majority of research on gender differences in cultural capital accumulation, where females tend to have higher levels of cultural capital than males (DiMaggio, 1982; Katz-Gerro, 2002; Bihagen and Katz-Gerro, 2000; Mohr and DiMaggio, 1995; Dumais, 2002); however, my cultural omnivorousness and voraciousness results clearly do not support this. This would seem another area where the mechanisms for the accumulation of these two different components of cultural capital clearly differ.

I had hypothesised that being a first-born might have an effect on the child's cultural capital levels. There were two competing hypotheses: first, that children with older siblings might get taken along to cultural activities that their siblings are attending; and secondly, that parents of first-born children might have more time and economic resources to devote to that particular child and so they will participate more widely and frequently in cultural activities. I found some support for this second hypothesis; being a first-born was significantly associated with higher levels of cultural voraciousness at age two and reading every day at both ages. Given that both cultural voraciousness and the reading variable are both about the frequency of activities the child participated in, it may well be that time is an important factor here with parents with more than one child potentially having less available time to read every day to their children.

I also found evidence that the positive effect of being a first born on cultural voraciousness at age two varied depending on household income, with first-born children from household's with lower income levels experiencing a more significant difference in their cultural voraciousness. I believe this supports the argument that one of the disadvantages of not being a first born for a child's cultural capital is the extra economic cost for cultural activities that extra siblings bring. I tested that theory for reading by including the same interaction terms in my reading models; however, no significant association was found, suggesting that the positive relationship between reading and being a first-born child does not change depending on a family's income. While the financial costs of taking multiple children to cultural activities seems to impact on a child's cultural voraciousness, the detrimental effect of not being a first born seems to arise from different channels for reading. I hypothesise that this may be to do with the time resources that having more children impinges upon.

Connected to whether or not the child is a first-born is whether or not the child has had any siblings born. I had hypothesised that having a sibling born after the start of the survey might result in the child accumulating less cultural capital. The reasons for this hypothesis are similar

to the second hypothesis for first-borns; parents with an extra young child to look after may have less time and money to invest in taking their child to cultural activities. My results provide some support for this hypothesis. While having had a sibling born is not a significant predictor of the child's cultural omnivorousness or the child's reading, nor is it a predictor of the child's cultural voraciousness at age two, it does have a significant effect on the child's cultural voraciousness at age four. Having a sibling born by age four significantly reduces the frequency with which children participate in cultural activities at age four. Similarly to my results around first-borns, this extra child in the household does not seem to impact on the number of different activities the child participates in, but it does have a negative impact on how frequently the child participates in cultural activities.

Household income was significantly associated with cultural omnivorousness, cultural voraciousness and a child's reading. Those with higher household incomes were more likely to read every day, participated more frequently in cultural activities and participated in a wider variety of activities. This provides further evidence of how disadvantaged children accumulate less cultural capital in early childhood. This result suggests that more needs to be done to lower the financial costs associated with cultural activities.

One variable which I imagined would be heavily linked to cultural capital was the number of children's books in the household. The results from my regressions tend to support this view with the number of books in the household being significantly associated with cultural omnivorousness, cultural voraciousness and a child's reading in both sweeps; the greater the number of books, the greater the child's cultural capital. I also found that the number of children's books in the household seemed to be mediating the effects of social class, household income and deprivation level on a child's reading. I believe that these factors which are being mediated are those most related to the economic circumstances of a child. I believe this shows that the benefits that economic resources bring to how often a child reads comes from being able to afford a greater number of children's books. I will explore this issue in more detail in the following chapter by including links between several elements of a child's socio-economic background and the number of children's books in the household.

From my results, I was also able to explore whether there is a particular number of books that is important for a child's cultural capital accumulation. For cultural omnivorousness and cultural voraciousness, children with over thirty books in the household had higher levels than all other children. Reading had a slightly different relationship. At age two and three, my results

indicate that providing children with over ten books will result in a higher likelihood that the child read every day with no difference found between children with over thirty books and children with between eleven and thirty books. However, at age four and five, the results indicate that the more books a child has in their house the better with children with over thirty books being significantly more likely to read every day than all other children. These results suggest that any policies aimed at providing young children with books to increases their reading would do well to increase the number of books as the child gets older.

One element I was very interested in exploring was whether or not using some regular form of childcare had an impact on a child's accumulation of cultural capital. I had hypothesised that children who used childcare regularly might have greater cultural participation due to childcare-based activities like cultural trips. My results for this were fairly mixed. Whether or not children regularly used childcare was non-significant between age two and age three in terms of cultural omnivorousness, cultural voraciousness and a child's reading. However, between age four and age five, childcare use did have a significant effect on the child's cultural omnivorousness and reading. Using childcare regularly was significantly associated with participating in a higher number of different cultural activities and an increased likelihood that the child read every day. Upon further exploration, I showed that childcare's positive effects on cultural omnivorousness at age four were greater for children with lower parental cultural capital. I believe this supports the idea that childcare use can help make up for a lack of parental cultural capital in terms of a child's accumulation of cultural capital. It suggests that childcare could be used as a means of redressing inequalities in early childhood cultural capital based on parental cultural capital. This finding that childcare might amend for inequalities within the child's home follows what Sylva et al. (2011, p. 119) found in their study that "the disadvantage of a poor Home Learning Environment is ameliorated by high quality pre-school."

Through basic descriptive analysis, I also suggested that children who were last taken to activities by childcare staff at age four were more likely to have not participated in that activity before at age two compared to other children. This indicates that regular childcare usage's positive association with cultural omnivorousness at age four may well be linked with the idea that childcare can introduce children to new cultural activities.

Does cultural capital have an educational effect?

I now move on to look at whether a child's cultural capital has an effect on their educational ability. I do this by looking at two cognitive ability tests: a Naming Vocabulary test and a Picture Similarities test. These tests are administered twice in the survey: at age three and at age five. I will be using the t-scores for each test. I aim to regress these test scores individually, controlling for background measures as well as my cultural capital measures: cultural omnivorousness; cultural voraciousness; and reading. Due to the similarities between cultural omnivorousness and cultural voraciousness (Correlation at age two: 0.857; age four: 0.826), I will only include one of these in each model. I will therefore run models controlling for cultural omnivorousness and reading. In the age three test score models, I will use my age two cultural omnivorousness measures and my age two to three reading measure. In the age five models, I will use my age four cultural omnivorousness measure and my age four to five reading measure.

Age Three

To begin with I will look at my models for the two cognitive ability tests at age three.

Naming Vocabulary

First, I will look at what factors influence Naming Vocabulary scores at age three. Here, Model 1 refers to the model before my cultural capital variables are added while Model 2 refers to the full model with cultural omnivorousness and reading included.

Table 23. Regression analysis of factors predicting Naming Vocabulary (age 3). Excluding (Model 1) and then including (Model 2) child's cultural omnivorousness and reading as predictors.

Naming Vocabulary (age 3)	**Model 1**		**Model 2**	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	-0.011	0.637	0.094	0.632
3. Small employers etc	-1.729	0.899	-1.440	0.891

4. Lower supervisory and technical occupations	-2.176**	0.821	-1.956*	0.814
5. Semi-routine and routine occupations	-2.224**	0.755	-1.793*	0.750
6. Never worked	-3.185	1.755	-2.266	1.743
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-1.221*	0.529	-0.880	0.527
Higher Grade or equivalent	-2.548**	0.977	-2.290*	0.969
Standard Grade or equivalent	-2.062**	0.790	-1.270	0.789
Number of parents who read	0.364	0.304	0.104	0.303
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	0.525	0.438	-0.018	0.449
Use library often	1.588**	0.609	0.403	0.634
Parental creative writing	-0.202	0.636	-0.505	0.632
Importance of cultural activities				
Not at all important	-3.107**	1.113	-1.709	1.127
Not really important	-2.489***	0.643	-1.557*	0.657
Neither important nor unimportant	-1.935**	0.633	-1.156	0.641
Quite important	-1.478**	0.569	-1.227*	0.566
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	1.465**	0.504	1.637**	0.500
Small, accessible towns	2.315**	0.713	2.632***	0.709
Small remote towns	4.402***	1.139	4.469***	1.131
Accessible rural	2.076**	0.640	2.162**	0.636
Remote rural	3.679***	0.962	3.581***	0.954
Female	4.572***	0.395	4.312***	0.394
First born	3.207***	0.486	2.669***	0.489
Sibling born	-2.916***	0.725	-2.840***	0.718
Household income (£1,000)	0.087***	0.021	0.080***	0.021

Number of books in the house (age 1)				
0-10	-1.067	0.613	-0.243	0.616
11-20	-0.434	0.575	0.021	0.573
21-30	-0.129	0.632	0.256	0.628
30+ *(reference)*				
Access to activities				
Very happy with the range of activities (*reference*)				
Quite happy with the range of activities	0.735	0.548	1.010	0.546
Would like child to have slightly more access	-0.572	0.598	-0.278	0.595
Would like child to have much more access	-1.026	0.739	-0.620	0.734
Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	-0.618	0.615	-0.571	0.609
13.5640 - 21.0436	0.094	0.635	0.118	0.629
21.0521 - 33.6982	-2.208**	0.695	-2.028**	0.689
33.7252 -89.0941 – most deprived	-0.891	0.720	-0.557	0.714
Use childcare (age 2)	0.031	0.461	-0.033	0.457
Cultural capital				
Cultural Omnivorousness (age 2)			1.077***	0.231
Reading (age 2-3)			0.540***	0.087
Constant	49.252***	1.220	39.950***	1.687
R-Squared	0.148		0.165	

*N = 3,352; *p* < .05, **p* < .01, ***p* < .001

Both of the child's cultural capital measures were associated with the child's Naming Vocabulary score at age three. The cultural omnivorousness of the child has a significant, positive effect; the greater the number of different activities the child participated in at age two, the higher the child's test score. How often the child read also had a significant and positive

effect; the more often the child read, the higher they scored on the Naming Vocabulary test. These effects were found after controlling for all of my background measures.

Only one of my parental cultural capital variables were associated with the child's Naming Vocabulary score at age three. Children whose parents thought cultural activities were very important for their children scored significantly higher on the test at age three. Parental reading, parental library usage and parental creative writing all had no significant association.

Both social class and parental education level were significantly associated with the child's Naming Vocabulary score at age three. Children with highly educated parents and from higher social classes tended to score higher on the test.

The urban-rural classification of where the child lived, the sex of the child, whether the child was a first born, whether a sibling was born since the survey started, household income and the level of deprivation of the area the child lived were all significantly associated with the child's Naming Vocabulary scores at age three. Children who lived in more rural locations, who were female, who were first borns, who didn't have a sibling born since the start of the survey, who had higher household income and who lived in a less deprived location all had higher Naming Vocabulary test scores at age three.

The number of children's books in the household, parents' happiness with access to activities and whether the child used childcare regularly all had no significant association.

Looking at the model before the introduction of the child's cultural capital, you see that the introduction of my cultural capital variables – cultural omnivorousness and reading – added slightly to the R-squared, increasing it from 14.8% to 16.5%.

The addition of my cultural capital variables in to the model did have some slight effects on the educational effects of certain background factors. The most notable of these was for parental library usage. Before the introduction of the cultural capital variables, children whose parents often used the library scored significantly higher on their Naming Vocabulary test at age three compared to children whose parents didn't use the library. Once the cultural capital variables were introduced however, parental library usage was rendered non-significant. The introduction of my cultural capital variables into the model also increased the effect of parental education level on Naming Vocabulary scores. Whereas in my final model, only children whose parents had a Higher Grade or equivalent as their highest qualification scored significantly lower than children with parents who have degrees, before cultural capital was

introduced all children scored significantly lower than children with university educated parents.

Picture Similarities

I now move on to look at what factors influenced a child's Picture Similarities score at age three. Again, Model 1 refers to the model before cultural capital is added while Model 2 refers to the full model including these variables.

Table 24. Regression analysis of factors predicting Picture Similarities (age 3). Excluding (Model 1) and then including (Model 2) the child's cultural omnivorousness and reading as predictors.

Picture Similarities (age 3)	Model 1		Model 2	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.085	0.555	0.144	0.552
3. Small employers etc	-0.771	0.777	-0.600	0.774
4. Lower supervisory and technical occupations	-1.251	0.714	-1.167	0.711
5. Semi-routine and routine occupations	-0.875	0.655	-0.633	0.654
6. Never worked	-4.895**	1.527	-4.362**	1.523
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.160	0.460	0.012	0.461
Higher Grade or equivalent	0.990	0.850	1.124	0.848
Standard Grade or equivalent	-1.189	0.685	-0.737	0.688
Number of parents who read	0.538*	0.264	0.400	0.265
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	-0.203	0.381	-0.421	0.392
Use library often	0.028	0.528	-0.537	0.551

Parental creative writing	-0.255	0.551	-0.409	0.550
Importance of cultural activities				
Not at all important	-2.362*	0.969	-1.707	0.985
Not really important	-0.997	0.558	-0.581	0.573
Neither important nor unimportant	-1.090*	0.549	-0.738	0.558
Quite important	-0.562	0.495	-0.457	0.494
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	0.302	0.437	0.374	0.437
Small, accessible towns	1.627**	0.618	1.764**	0.618
Small remote towns	3.640***	0.988	3.584***	0.986
Accessible rural	1.418*	0.556	1.427*	0.555
Remote rural	2.453**	0.837	2.357**	0.834
Female	2.335***	0.343	2.143***	0.344
First born	1.206**	0.422	0.833	0.426
Sibling born	-0.837	0.628	-0.794	0.625
Household income (£1,000)	0.066***	0.019	0.062**	0.019
Number of books in the house (age 1)				
0-10	-1.247*	0.533	-0.768	0.538
11-20	-0.604	0.500	-0.331	0.500
21-30	-0.215	0.549	0.002	0.548
30+ *(reference)*				
Access to cultural activities				
Very happy with the range of activities *(reference)*				
Quite happy with the range of activities	-0.784	0.476	-0.660	0.477
Would like child to have slightly more access	-0.450	0.520	-0.313	0.519
Would like child to have much more access	-0.037	0.642	0.178	0.641
Scottish Index of Multiple Deprivation				

0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	-1.091*	0.534	-1.060*	0.531
13.5640 - 21.0436	-1.164*	0.553	-1.158*	0.550
21.0521 - 33.6982	-2.282***	0.603	-2.173***	0.601
33.7252 -89.0941 – most deprived	-2.961***	0.625	-2.761***	0.624
Use childcare (age 2)	0.279	0.400	0.234	0.398
Cultural capital				
Cultural Omnivorousness (age 2)			0.430*	0.202
Reading (age 2-3)			0.384***	0.076
Constant	49.418***	1.059	43.595***	1.472
R-Squared	0.093		0.101	

*N = 3,369; *p* < .05, ***p* < .01, ****p* < .001

The cultural omnivorousness of the child and the frequency with which they read were significant predictors of their Picture Similarities test score at age three. The greater the number of different activities that the child participated in and the more often they read, the higher the child's test score.

None of the parental cultural capital variables have any significant effect on the child's Picture Similarities test scores at age three. Children from the highest social class score significantly higher on the Picture Similarities test at age three than children from the lowest social class. There is no significant difference between children from the remaining social classes and children from the highest social class. Parental education level has no significant effect on the child's Picture Similarities score at age three.

The urban-rural classification of where the child lives, the sex of the child, household income and the level of deprivation of where the child lives were all significantly associated with Picture Similarities scores at age three. Children who lived in more rural locations, who were female, who had higher household income and who lived in a less deprived area scored significantly higher on the test at age three.

As well as parental education level and parental cultural capital, a number of other variables had no significant association: being a first born, having a sibling born since the survey started,

number of children's books in the household, parents' happiness with access to activities and regular childcare usage.

The introduction of cultural omnivorousness and reading into the model affected the R-squared of the model slightly with the percentage of variation in Picture Similarities scores explained rising from 9.3% to 10.1%. The inclusion of the child's cultural capital in the model does have a noticeable effect on several elements of the model. Before the child's cultural capital is included in the model, both having parents who thought cultural activities were important and having parents who read was significantly associated with higher Picture Similarities scores. Once cultural capital is included in the model, these elements of parental cultural capital are no longer significant. The inclusion of cultural capital in the model also rendered being a first born and the number of children's books in the household non-significant. Before cultural capital's inclusion, being a first born and the number of children's books in the household were positively associated with the child's test score.

Age Five

I then moved on to look at these same test scores but now at age five. The below models account for the child's cultural capital, parental cultural capital and the background variables.

Table 25. Regression analysis of factors predicting Naming Vocabulary (age 5) and then factors predicting Picture Similarities (age 5).

Educational tests (age 5)	**Naming Vocabulary (age 5)**		**Picture Similarities (age 5)**	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.246	0.551	0.251	0.587
3. Small employers etc	-1.355	0.749	-0.338	0.798
4. Lower supervisory and technical occupations	-1.731*	0.711	-1.790*	0.755
5. Semi-routine and routine occupations	-0.871	0.655	0.072	0.699
6. Never worked	0.821	1.623	0.541	1.729

Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.579	0.455	-0.271	0.485
Higher Grade or equivalent	-0.708	0.842	-0.127	0.896
Standard Grade or equivalent	-1.027	0.680	-0.199	0.725
Number of parents who read	0.336	0.263	0.159	0.280
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	0.549	0.379	-0.035	0.404
Use library often	1.021	0.532	0.391	0.566
Parental creative writing	0.721	0.542	-0.061	0.579
Importance of cultural activities				
Not at all important	-0.184	0.964	0.158	1.026
Not really important	-0.770	0.555	-0.132	0.592
Neither important nor unimportant	-0.193	0.543	0.109	0.579
Quite important	0.020	0.489	-0.007	0.521
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	1.083*	0.426	0.797	0.454
Small, accessible towns	1.584*	0.613	1.631*	0.653
Small remote towns	1.863	0.993	-2.406*	1.058
Accessible rural	2.016**	0.581	0.490	0.620
Remote rural	4.111***	0.774	0.750	0.823
Female	1.243***	0.344	0.890*	0.366
First born	2.684***	0.380	0.411	0.404
Sibling born	-0.915*	0.395	0.430	0.421
Household income (£1,000)	0.047*	0.019	0.061**	0.020
Number of books in the house (age 3)				
0-10	-3.630***	0.873	-2.101*	0.929
11-20	-1.474*	0.586	-1.915**	0.626
21-30	-0.695	0.481	-0.435	0.513

30+ *(reference)*				
Access to activities				
Very happy with range of activities (*ref*)				
Quite happy with the range of activities	0.059	0.465	0.251	0.495
Would like child to have slightly more access	-0.800	0.511	0.527	0.544
Would like child to have much more access	-1.325*	0.630	0.810	0.671
Scottish Index of Multiple Deprivation				
0.9449 - 7.7446 - least deprived (*ref*)				
7.7472 - 13.5627	0.096	0.521	-0.300	0.555
13.5640 - 21.0436	-0.116	0.545	0.196	0.580
21.0521 - 33.6982	-0.013	0.593	-0.440	0.631
33.7252 -89.0941 – most deprived	-0.762	0.616	-1.787**	0.656
Use childcare (age 4)	0.448	0.371	-0.368	0.396
Cultural Omnivorousness (age 4)	0.886***	0.188	0.536**	0.201
Reading (age 4-5)	0.396***	0.073	0.219**	0.078
Constant	48.970***	1.464	52.685***	1.561
R-Squared	*0.144*		*0.054*	
N	*3,272*		*3,268*	

*$p < .05$, **$p < .01$, ***$p < .001$

At age five, cultural omnivorousness and the child's reading measure were still significantly associated with higher Naming Vocabulary scores. However, there are a number of other differences between what factors were significantly associated with Naming Vocabulary scores at age five compared to age three.

While the importance parents placed on cultural activities was significantly associated with Naming Vocabulary score at age three, at age five none of my parental cultural capital variables were associated with the child's test score. Both parental education level and the level of deprivation where the child lives were not significantly associated with Naming Vocabulary scores at age five despite both being significant predictors of the child's score at age three. The number of children's books in the household and how happy parents were with the child's access to activities were significant predictors of the child's Naming Vocabulary score at age

five despite having no significant association with the child's score at age three. Children who had more books in the house and whose parents were happier with their access to activities scored higher on the test at age five.

The inclusion of cultural omnivorousness and reading in the model raised the R-squared from 12.9% to 14.4%. The introduction of the child's cultural capital to the model affected both parental education level and parental cultural capital. Before the inclusion of cultural capital in the model, parental education level was positively and significantly associated with a child's Naming Vocabulary score. However, the inclusion of cultural capital leaves parental education non-significant. Three of my parental cultural capital measures were affected by the inclusion of cultural capital into the model. Parental reading, parental library usage and the importance parents placed on cultural activities were significant positive predictors of the child's test score but they were all non-significant after the inclusion of cultural capital as can be seen from the table below.

Table 26. Parental cultural capital's effects on Naming Vocabulary (age 5) with (Model 2) and without (Model 1) the inclusion of child's cultural omnivorousness and reading as predictors of Naming Vocabulary (age 5).

Naming Vocabulary (age 5)	**Model 1**		**Model 2**	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Number of parents who read	0.559*	0.263	0.336	0.263
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	0.884*	0.378	0.549	0.379
Use library often	1.565**	0.528	1.021	0.532
Parental creative writing	0.770	0.547	0.721	0.542
Importance of cultural activities				
Not at all important	-0.557	0.969	-0.184	0.964
Not really important	-1.171*	0.556	-0.770	0.555
Neither important nor unimportant	-0.470	0.545	-0.193	0.543
Quite important	-0.060	0.493	0.020	0.489
Very important *(reference)*				

*N = 3,272; *p* < .05, **p* < .01, ***p* < .001

Interestingly, there are very few differences between the significant predictors of Picture Similarities score at age three and age five. my children's cultural capital measures are still significantly associated with higher test scores at age five. All those factors which were significantly associated with Picture Similarities scores at age three were significantly associated with Picture Similarities scores at age five. The only factor which changed between the two ages was the number of children's books in the household which was significantly associated with Picture Similarities scores at age five but wasn't at age three. The number of children's books in the household was positively associated with the child's test score at age five.

It is worth pointing out that the R-squared for this model is very low at 5.4% suggesting that my model poorly predicts Picture Similarities scores at age five. The inclusion of the child's cultural capital into the model increases the R-squared value but only very slightly, from 4.9% to 5.4%. The inclusion of the child's cultural capital into the model does not change the significance levels or coefficient directions for any of the variables.

Does the data support the cultural mobility model?

To test whether my data followed the cultural mobility model or not I introduced interaction terms into my regressions. These were an interaction term between social class and cultural omnivorousness and an interaction term between reading and social class. I have earlier indicated that if my interaction effect returns a statistically significant positive result this would provide evidence for DiMaggio's (1982) cultural mobility model whereby cultural capital has a greater educational benefit for children from lower social classes. I also stated that if I found a significant negative result this would provide support for the more traditional cultural reproduction model where cultural capital has greater educational benefit for those from a high social class. I also suggested that if I were to find no significant effect this would be evidence for Aschaffenberg and Maas' (1997) cultural mobility model where cultural capital is an equal educational resource for everyone regardless of class.

I ran regressions for Naming Vocabulary and Picture Similarities at both age three and age five, first controlling for my interaction effect between cultural omnivorousness and social class and between reading and social class. In every single regression, my interaction terms were non-significant. This suggests that my data provides strong support for Aschaffenberg and Maas' (1997) cultural mobility model – the idea that cultural capital can be a positive educative resource for any child in possession of it.

Discussion

I found strong evidence that a child's cultural capital has a positive effect on their educational development. After controlling for a whole host of background factors, both cultural omnivorousness and reading were significant positive predictors of cognitive ability test scores in every regression. This is a very important result as it provides support for the idea that a very young child's cultural capital can have an impact on their educational development. It suggests there is a very clear educational benefit to a young child's cultural participation and reading which in turn supports the view that cultural participation and reading should be promoted at a very early age.

It is important to link this back to my findings on what factors influence the accumulation of cultural capital in early childhood. I saw very clearly that disadvantaged children were significantly less likely to accumulate cultural capital. I have now shown that cultural capital has a positive effect on a child's educational development in early childhood. Cultural capital can therefore be seen as a potential cause of educational inequalities in early childhood.

It is also important to note that while my results tend to show cultural capital having a positive impact on a child's educational ability, this is by no means the only factor. Despite cultural capital's consistently strong and significant effect on the cognitive test scores, other measures of disadvantage remain significant predictors. For instance, social class is significantly associated with all of my test scores. This suggests that while cultural capital helps explain educational inequalities in early childhood, it is by no means the only source of inequality in this period.

One very interesting result was that parental cultural capital had no significant effect on cognitive ability test scores in three of my four models. Only for my age two Naming Vocabulary score did parental cultural capital have any significant association where parental cultural importance was a significant predictor. What makes this result so interesting is that before the introduction of cultural omnivorousness and reading into the model, at least one of the parental cultural capital variables was a significant predictor in three of the four regressions. Parental library usage was a significant predictor of Naming Vocabulary score at age three and age five; parental cultural importance was a significant predictor of Naming Vocabulary score at age three and five and Picture Similarities score at age three; and parental reading was a significant predictor of Picture Similarities score at age three and Naming Vocabulary score at age five. This result is very interesting and suggests that the child's cultural capital mediates

the positive effect of parental cultural capital on the child's educational development, backing up Sullivan's (2001) findings which found that "the effect of parental cultural capital on pupils' GCSE scores is partially mediated by the activities component of pupils' cultural capital" (p. 906).

The introduction of my cultural capital variables into the models also affected other variables which have been linked with cultural capital. For instance, in the regressions of Naming Vocabulary and Picture Similarities scores at age three, the number of books in the household aimed at children was originally significantly associated with higher test scores in both regressions. However, once my cultural capital variables were added to the model, any effect was rendered statistically insignificant. Again, this is an interesting result which suggests that at age three any positive effect that having books in the household might have on a child's cognitive test scores is mediated by the child's cultural capital. We might speculate that what is important about the books in the household is how they are converted into cultural capital, perhaps through those books being read to the child. I will explore this issue of cultural capital mediating the educational effects of certain factors in more detail in the following chapter.

My results tend to disagree with there being a divide between reading and more formal cultural activities. As discussed earlier, several scholars (Crook, 1997; De Graaf et al., 2000) argued that the real educational benefit of cultural capital came from the reading element and that if more studies separated cultural capital into two parts – reading and formal cultural activities – then they would show that reading had a significant effect on educational success whereas the more formal cultural activities would come out as a non-significant predictor. However, my own results show clear support for a different view – that both reading and formal cultural activities develop educational skills. In every model, both components of a child's cultural capital had their own unique significant educational benefit.

I found strong evidence to suggest that cultural capital's educational benefits are available to all children regardless of their social class. This finding is in support of Aschaffenberg and Maas' (1997) cultural mobility model. This result suggests that if a child from a low social class had a high level of cultural capital, then they would still be able to profit from the educational benefits that I have shown that cultural capital in early childhood brings. This result has large ramifications for the sort of policy recommendations we might make around the unequal distribution of cultural capital as will be discussed in the concluding chapter.

5. A complete model for cultural capital in early childhood

In this chapter, I will use structural equation modelling to explore what factors are associated with a child's cultural capital as well as looking at whether or not the child's cultural capital has an educational effect or not. Structural equation modelling will allow me to utilise cultural capital as both a dependent variable and an independent variable in the same model as well as allowing paths from one section of the model to influence later sections of the model. For instance, if parental cultural capital is a significant predictor of the child's cultural capital, this will be taken into account in the section of the model which looks at what factors influence the child's educational ability.

In this chapter, I will explore direct effects, indirect effects and total effects. A direct effect is the effect an individual independent variable has on a dependent variable, controlling for the effects of all other independent variables; an indirect effect is the mediated effect an independent variable has on the dependent variable; and a total effect is the sum of the indirect and direct effects on the dependent variable (Pearl, 2001).

A simplified version of the full model that I will run is shown in Figure 17 below. It constitutes three main parts. The first part (i) looks at whether social class or parental education level are associated with parental cultural capital. The next part (ii) looks at what factors influence a child's accumulation of cultural capital, looking at social class, parental education level, parental cultural capital and other background variables. The third section (iii) looks at what factors are associated with a child's educational ability; this model includes paths from all the variables that had paths to the child's cultural capital as well as the child's cultural capital itself.

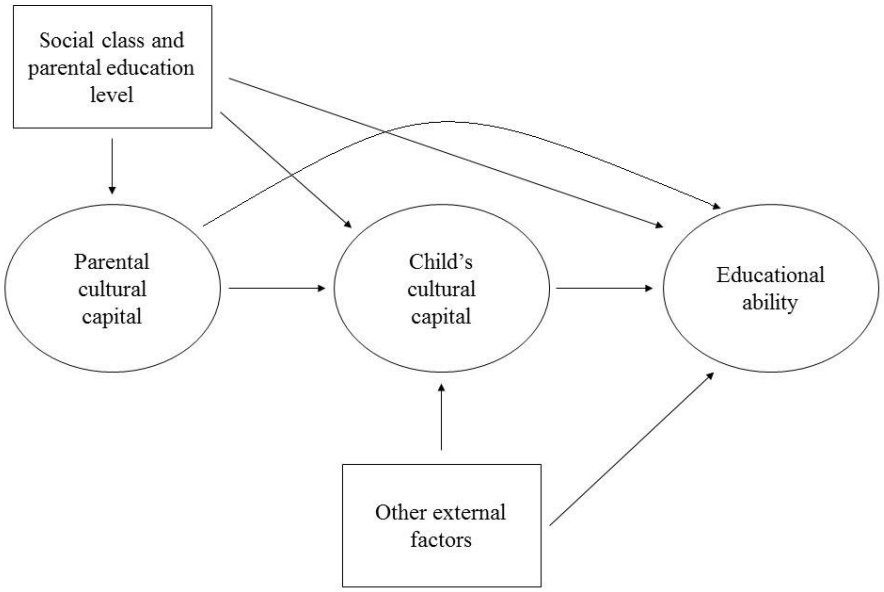


Figure 17. Simplified diagram of the proposed model run in this chapter. Circles refer to latent constructs while rectangles refer to observed variables. Arrows indicate paths between variables and constructs.

The statistics for the goodness of fit of the model suggested that the model was well fitted to the data (Table 27).

Table 27. Goodness of fit statistics for full model

RMSEA	SRMR	CFI
0.035	0.025	0.939

Parental cultural capital

This first part of my model looked at social class and parental education level's relationship with each of my parental cultural capital measures individually. Figure 18 shows the results from this section of the model.

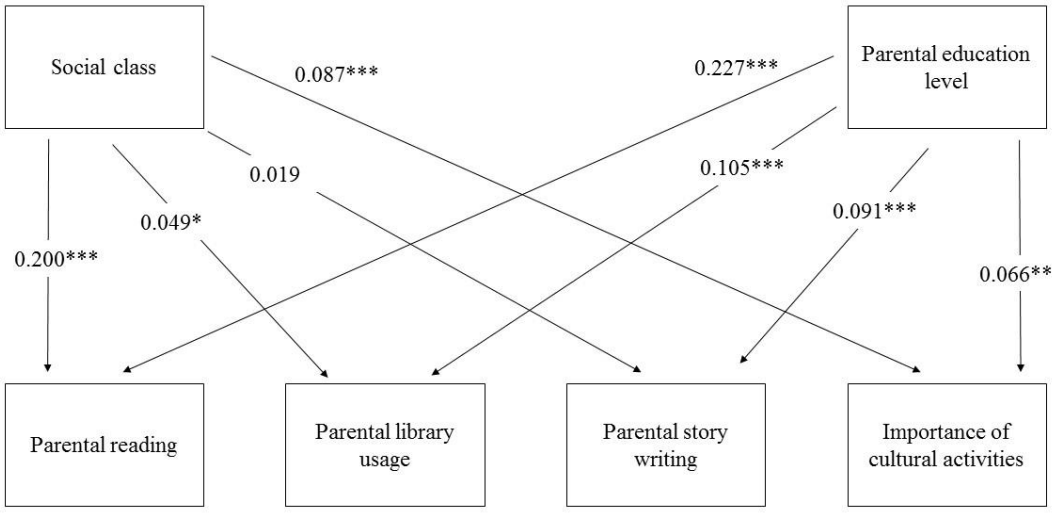


Figure 18. Social class and parental education level's direct effects on parental cultural capital. Standardised.

**p < .05, **p < .01, ***p < .001; N = 3,104*

We can see that for each element of parental cultural capital, parental education level is a significant positive predictor. Parents with higher qualifications are more likely to read for pleasure, use the library, write creatively and believe cultural activities are important for their children. The social class of the household is also significantly associated with all but one of the measures of parental cultural capital. For every parental cultural capital measure apart from parental creative writing, the higher a family's social class, the greater their parental cultural capital. For parental creative writing, social class was non-significant.

Whereas in the previous chapter I showed similar results, they did not form a strong part of my analysis. However, due to the nature of structural equation modelling, these results are now a part of my full model. This means that parental education level and social class' significant relationship with parental cultural capital will be accounted for when looking at what factors are associated with childhood cultural capital and educational ability. This might shed light on whether parental cultural capital is important for children's cultural capital or whether it is just the indirect effects of social class and parental education level which are actually important. Conversely, it might also help determine whether social class and parental education level are important for the accumulation of a child's cultural capital or whether it is only their relationship to parental cultural capital that matters. This would support Sullivan's (2001, p.

902) findings that social class and parental education level's effects on a child's cultural activities are mediated by parental cultural capital.

Books in the household

Before moving on to the section of the model which looks at what factors are associated with a child's cultural capital, I will introduce an additional section of my model. After finding evidence in the previous chapter that the number of children's books in the household might be somewhat mediating the effects of certain socio-economic factors on a child's cultural capital, this additional section of my model focuses on what factors are associated with the number of children's books in the household.

This might help me explain if the number of books in the household is actually important for a child's cultural capital and educational ability or whether they are just serving as a proxy for another background factor. I will control for social class, parental education level, household income and parental cultural capital. Table 28 presents the direct effects of those variables on the number of children's books in the house. Tables with the indirect effects of all sections of the model can be found in the appendix (Tables 65 - 69).

Table 28. Standardised direct effects of structural equation model predicting number of children's books in the house (age 3).

Number of children's books in the house (age 3)	Coeff.	Stand. Error	z	Sig. level
Social class	0.146	0.012	6.66	0.000
Parental education level	0.110	0.018	5.22	0.000
Household income	0.075	0.001	3.59	0.000
Parental cultural capital				
Parental reading	0.083	0.022	4.47	0.000
Parental library usage	0.090	0.021	5.25	0.000
Parental creative writing	0.022	0.047	1.28	0.200
Importance of cultural activities	0.048	0.013	2.82	0.005
Constant	2.710	0.096	28.36	0.000

N = 3,104

We see that all the variables except parental creative writing are significantly associated with the number of children's books in the household. The higher the household's social class, the higher parents' qualifications and the higher the household's income, the greater the number of children's books in the house at age three. All of the parental cultural capital variables apart from parental creative writing were significant and positively associated with the number of books in the household; the greater the parents' cultural capital, the greater the number of children's books in the house at age three.

The importance of these results will largely be felt in the later sections of the model where I hope to shed light on whether children's books in the household are mediating the effects of these variables which I have controlled for here.

It is important to note that these results are taking into account my section of the model which looked at social class and parental education level's association with parental cultural capital. I can therefore look at any indirect effects parental education level or social class had on the number of children's books in the household through their pathways to parental cultural capital. my results showed that both parental education level and social class had significant indirect effects on the number of children's books as well as their significant direct effects. The indirect results show that parental cultural capital's positive relationship with the number of children's books in the household can be somewhat explained by social class and parental education level.

The accumulation of cultural capital

The next part of my model will look at what factors are associated with the accumulation of a child's cultural capital. Before looking at what factors are associated with its accumulation, I will explain how I am measuring a child's cultural capital in this model.

My measures for the child's cultural capital will be split into two components: formal cultural activities and reading. My reading measure provides a score from 0-2 telling me if the child read every day or not at age 2-3 and age 4-5. My formal cultural activities component will be a latent construct. A latent construct is one that is not observed itself but is rather inferred from other variables which are observed. I will be utilising my four variables which measure the frequency of the child's visits to cultural activities for this latent construct.

To begin with I looked at whether or not the variables I have decided to use as part of my formal cultural activities latent construct are capturing the same concept. To do this, structural equation modelling uses confirmatory factor analysis. If my variables all belong to a common

factor then they should have standardised factor loadings over 0.3 which I have chosen as my designated cut-off point as described earlier in the Methods chapter. Below are the results from the factor analysis:

Table 29. Standardised factor loadings for the formal cultural activities latent construct.

Variables	Factor loading (standardised)
Trips to the theatre/concerts	0.429
Trips to the museum	0.641
Trips to the library	0.330
Trips to the zoo/aquarium	0.350

N = 3,104

You can see that all of these variables fall above the 0.3 rule of thumb I used and thus indicate that they are capturing the same concept. After being satisfied with my cultural capital measures, I preceded to look at the section of the model which focuses on the accumulation of cultural capital. First I look at what factors are associated with my formal cultural activities latent construct before going on to look at what factors are associated with how often a child read.

The below table details what effect social class, parental education level, parental cultural capital and a number of other background variables have on the child's formal cultural activities component of cultural capital. It is important to note that this section of the model accounts for the previous two sections I have explored: the factors influencing parental cultural capital; and the factors influencing the number of children's books in the household.

Table 30. Standardised direct effects of structural equation model predicting a child's formal cultural activities component.

Formal cultural activities component	Coeff.	Stand. Error	z	Sig. level
Social class	0.084	0.026	3.21	0.001
Parental education level	0.218	0.025	8.71	0.000
Parental cultural capital				
Parental reading	0.156	0.022	7.11	0.000
Parental library usage	0.153	0.021	7.20	0.000
Parental creative writing	0.127	0.020	6.38	0.000
Importance of cultural activities	0.378	0.020	18.95	0.000
Other background variables				
Number of books in the household	0.168	0.021	7.96	0.000
Female	-0.046	0.019	-2.37	0.018
SIMD	-0.081	0.023	-3.57	0.000
First born	0.015	0.022	0.71	0.479
Sibling born	-0.056	0.021	-2.62	0.009
Urban-rural classification	-0.092	0.020	-4.59	0.000
Access to cultural activities	0.101	0.021	4.89	0.000
Childcare usage	0.021	0.020	1.06	0.289
Household income	0.085	0.026	3.28	0.001

N = 3,104

Social class and parental education had a significant association with the child's formal cultural activities component of cultural capital. The higher the household's social class and the higher a child's parents educational qualifications, the higher the child's level of cultural capital. Notably, these results are independent of any indirect effects on the child's formal cultural activities through social class and parental education level's paths to the parental cultural capital variables and the number of children's books in the household.

All of the parental cultural capital variables were positively and significantly associated with the child's formal cultural activities component. Having parents who read for pleasure, used the library, thought cultural activities were important and did creative writing were all associated with higher levels of this component of cultural capital. For every parent a child has who reads for pleasure, their formal cultural activities component had a 0.156 standard deviation increase. Figure 19 tries to elucidate the key pathways between social class, parental education level, parental cultural capital and the child's formal cultural activities component.

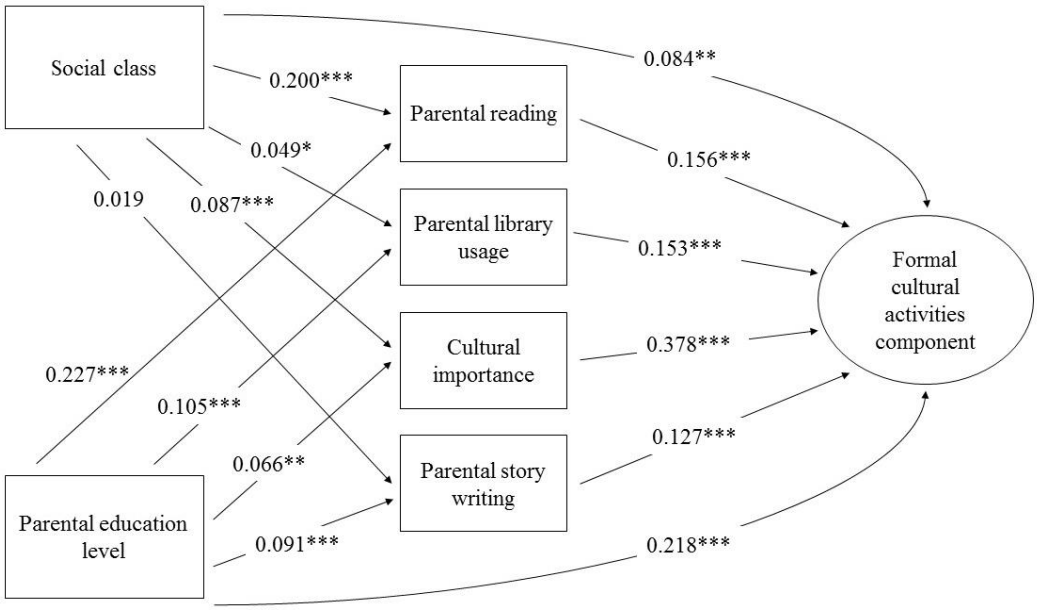


Figure 19. Standardised direct effects between social class, parental education level, parental cultural capital variables and a child's formal cultural activities component. Circles refer to latent constructs while rectangles are observed variables. *p < .05, **p < .01, ***p < .001; N = 3,104.

A number of other factors were significantly associated with the child's formal cultural activities component. The number of children's books in the household, the sex of the child, the level of deprivation where they live, having a sibling born since the survey started, the urban-rural classification of where the child lives, parents' happiness with access to activities and household income were all significantly associated with this formal cultural activities component of cultural capital. Children who had more children's books, who were female, who lived in less deprived areas, who had no sibling born since the survey started, who lived in an urban area, who had parents who were happy with their access to activities and who had higher household income all had higher levels of this component of cultural capital.

Being a first born and childcare usage had no significant association with a child's level of this cultural capital component.

I then looked at which factors were associated with whether a child read every day. I looked at the same factors as those in the formal cultural activities section. Below you can see the table:

Table 31. Standardised direct effects of structural equation model predicting a child's reading.

Reading	Coeff.	St. Err.	z	Sig. level
Social class	0.051	0.021	2.45	0.014
Parental education level	0.096	0.020	4.79	0.000
Parental cultural capital				
Parental reading	0.081	0.017	4.65	0.000
Parental library usage	0.075	0.016	4.61	0.000
Parental creative writing	0.016	0.016	1.00	0.315
Importance of cultural activities	0.038	0.016	2.38	0.017
Other background variables				
Number of books in the household	0.246	0.017	14.88	0.000
Female	0.143	0.016	9.16	0.000
SIMD	-0.038	0.018	-2.06	0.039
First born	0.178	0.017	10.44	0.000
Sibling born	0.004	0.017	0.25	0.805
Urban-rural classification	0.030	0.016	1.89	0.059
Access to cultural activities	0.052	0.017	3.10	0.002
Childcare usage	-0.013	0.016	-0.78	0.437
Household income	0.036	0.021	1.72	0.086
Constant	-0.357	0.119	-3.01	0.003

N = 3,104

Social class and parental education level were both significant predictors of the amount a child read. The higher the educational qualifications a child's parents had and the higher the social

class of the child's family, the more likely the child read every day. These results are independent of any indirect effects parental education level or social class have on a child's reading through their pathways to parental cultural capital and the number of children's books in the household.

In terms of parental cultural capital, all but one of my parental cultural capital variables were significantly associated with the amount a child read. The more parents read for pleasure, visited the library, and valued the importance of cultural activities, the more often child read. There was no significant association between parental creative writing and whether or not a child read every day.

Similarly to Figure 19, Figure 20 shows the key pathways between social class, parental education level, parental cultural capital and the child's reading.

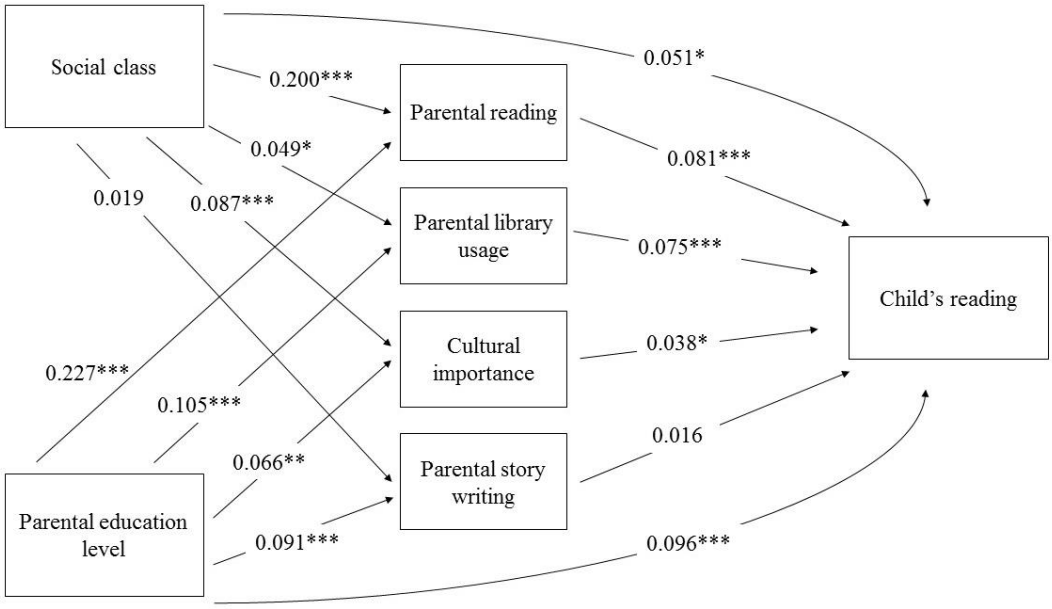


Figure 20. Standardised direct effects between social class, parental education level, parental cultural capital variables and a child's reading. Circles refer to latent constructs while rectangles are observed variables. *p < .05, **p < .01, ***p < .001; N = 3,104.

Unsurprisingly, the number of children's books in the household was also a strong predictor of how often a child read. The greater the number of children's books in the household, the more often a child read.

A number of other background factors were associated with whether a child read every day. The level of deprivation of the area the child lived, the sex of the child, whether or not the child

was a first born and how happy parents were with their child's access to activities were all associated with the reading component of cultural capital. Children who lived in less deprived areas, who were female, who were first borns and who had parents who were happy with their access to activities were all more likely to read every day.

Whether a child had a sibling born since the survey started, the urban-rural classification of where the child lived, childcare usage and household income were all non-significant.

I had proposed introducing pathways to the number of books in the household in this model on the back of my results from the previous chapter which had suggested the number of books in the household might be mediating elements of a family's background on a child's accumulation of cultural capital. In particular, I wanted to explore whether the number of books in the household was mediating the effects of income on a child's cultural capital. To examine this, I removed the number of children's books in the household's link to both the formal cultural activities and reading components of a child's cultural capital. The results from this model showed that once the number of children's books' link to cultural capital had been removed, the effects of income on a child's cultural capital increased. For the formal cultural activities component, the effect size increased while for reading, household income went from being a non-significant predictor of a child's reading to a significant predictor; children from households with more income were more likely to read every day. This is evidence that the number of children's books in the household 'fully mediates' (Little et al., 2007) the effects of household income on a child's reading.

Figure 21 shows a visual representation of the number of children's books in the household mediating the effects of household income on a child's reading. All other elements are cut from the image.

Figure 21. Diagram of standardised direct effects between household income, number of children's books in the household and a child's reading. Top image is from model including path from number of children's books to child's cultural capital while bottom image has removed this path. *p < *.05*, **p < *.01*, ***p < *.001*. *N = 3,104.*

I have previously suggested that deprivation level, urban-rural classification and a parents' happiness with their child's access to activities are all somewhat linked. I have hypothesised that low cultural capital levels for children in rural locations and more deprived locations might be caused by a lack of access to cultural activities. To explore this further, I ran a separate model which included paths from SIMD quintile and urban-rural classification to parents' happiness with the availability of activities for their children. This showed that both deprivation level and urban-rural classification were significant predictors of a parent's happiness with their child's access to activities. Parents were less happy with the availability of activities for their children when they lived in more rural areas and when they lived in more deprived locations. This result is very informative and suggests that some of the low cultural capital levels we see amongst children from both rural and deprived areas may indeed arise from a lack of access to cultural activities.

However, including these links in the model did not seriously affect the accumulation of cultural capital results. Urban-rural classification, SIMD quintile and access to cultural

activities' effects on cultural capital accumulation were practically unchanged. This indicates that while the deprivation level and urban-rural classification do help significantly predict a parents' happiness with their child's access to activities, this does not seem the main pathway through which these two factors affect a child's cultural capital accumulation. Of course, this is not to say that deprivation level and urban-rural classification's relationship with cultural capital doesn't largely arise through access to cultural activities. As discussed earlier, my variable for access to activities is very subjective. This path was eventually excluded from the model as it significantly worsened the model fit. This suggests that while interesting to look at, this pathway between both urban-rural classification and SIMD quintile to parents' happiness with access to activities doesn't add very much to this model.

Indirect effects on a child's cultural capital

Social class and parental education level also have strong indirect effects on a child's cultural capital accumulation. These indirect effects come through social class and parental education level's paths to parental cultural capital and the number of children's books in the household. Table 32 shows us social class and parental education level's direct, indirect and total effects on a child's reading and formal cultural activities as well as the proportion of the total effects which come from direct and indirect channels.

Table 32. Social class and parental education level's unstandardized direct, indirect and total effects on a child's reading and formal cultural activities.

	Reading			Formal cultural activities		
	Direct	Indirect	Total	Direct	Indirect	Total
Social class	0.025* (41%)	0.036*** (59%)	0.061***	0.014** (44%)	0.018*** (56%)	0.032***
Parental education level	0.072*** (58%)	0.053*** (42%)	0.124***	0.056*** (65%)	0.030*** (35%)	0.086***

Note: Percentages for indirect and direct effects are as a proportion of total effects. N = 3,104
**p < .05, **p < .01, ***p < .001.*

From the indirect effects, you can see that a large portion of social class and parental education level's effects on a child's cultural capital accumulation do come from their link to parental cultural capital and number of books in the household. In isolation, this might seem as though

social class and parental education level are only useful for the accumulation of cultural capital in early childhood because of their links to parental cultural capital and the number of books in the household. However, taking account of the direct effects, we see that even after modelling for social class and parental education level's links to parental cultural capital and the number of books in the household, social class and parental education level still have an important significant direct effect on a child's cultural capital.

From Table 32 we can see that social class' indirect effects on the two components of a child's cultural capital are greater than its direct effects. This means that the effects social class has on parental cultural capital and the number of children's books in the household contribute more to a child's cultural capital than any other means through which social class contributes to a child's cultural capital accumulation. There is only a slight difference in the proportion of social class' total effects coming from indirect and direct channels when comparing the reading component and the formal cultural activities component; a slightly higher proportion of social class' total effects on formal cultural activities come through direct effects.

We see a different picture when looking at parental education level's direct and indirect effects on a child's cultural capital. In contrast to social class, parental education level's direct effects on a child's cultural capital outweigh its indirect effects. This is true for both components of cultural capital. This means that having parents with higher qualifications in itself is more important for a child's accumulation of cultural capital than the effects parental education level has on parental cultural capital and the number of children's books in the household. There was also a noticeable difference in the proportion of parental education level's total effects coming from direct or indirect channels between the reading and formal cultural activities components of cultural capital. A greater proportion of parental education level's total effects on the formal cultural activities component came through its direct effects (65%) compared to the reading component (58%).

Seeing the importance of social class and parental education level's indirect effects on a child's cultural capital, I decided to explore the sources of these indirect effects. How much of these indirect effects came from parental cultural capital and how much came from the number of children's books in the household? Tables 33 and 34 help to shed light on this. Table 33 below lets me know for each component of cultural capital what proportion of social class' indirect effects came from parental cultural capital and what proportion from children's books in the house.

Table 33. Proportion of social class' unstandardized indirect effects for reading and formal cultural activities that came from parental cultural capital and number of children's books in the house.

	Reading			Formal cultural activities		
	Parental cultural capital	Children's books in household	Total	Parental cultural capital	Children's books in household	Total
Social class	0.012 (33.3%)	0.024 (66.6%)	0.036	0.012 (66.6%)	0.006 (33.3%)	0.018

Note: Percentages for parental cultural capital and children's books in household are as a proportion of social class' indirect effects on reading and formal cultural activities. N = 3,104

We see completely contrasting results for the source of social class' indirect effects on the two components of a child's cultural capital. For the reading component, a third of social class' indirect effects come through its association with parental cultural capital while two thirds come through its association with the number of children's books in the household. In contrast, these proportions are flipped for the formal cultural activities component, with a third of social class' indirect effects coming through the number of children's books in the household while two thirds came through its association with parental cultural capital.

We see then that the pathways through which social class has indirect effects is very different for my two components of cultural capital. For the reading component, it is most important that parental social class results in a large number of children's books in the household while for the formal cultural activities component, it is more important that social class translates to parental cultural capital.

Table 34 details the same as Table 33 but for parental education level. Looking at the sources of parental education level's indirect effects on my two components of childhood cultural capital, we see a similar pattern to social class. For the reading component, the majority of parental education level's indirect effects (57%) come through its relationship to the number of children's books in the household while for the formal cultural activities component, the majority (77%) comes through its relationship to parental cultural capital. For the formal cultural activities component, the proportion of parental education level's indirect effects that

are attributed to parental cultural capital is very high (77%).This means that for parents with high educational qualifications, it is far more important for their child's formal cultural activities participation if their educational qualifications have been translated into parental cultural capital rather than children's books in the household.

Table 34. Proportion of parental education level's unstandardized indirect effects for reading and formal cultural activities that came from parental cultural capital and number of children's books in the house.

	Reading			Formal cultural activities		
	Parental cultural capital	Children's books in household	Total	Parental cultural capital	Children's books in household	Total
Parental education level	0.023 (43%)	0.030 (57%)	0.053	0.023 (77%)	0.007 (23%)	0.030

Note: Percentages for parental cultural capital and children's books in household are as a proportion of parental education level's indirect effects on reading and formal cultural activities. N = 3,104

In both of these tables, what we find is quite clear: indirect effects coming from parental cultural capital are more important for the formal cultural activities component while indirect effects coming from the number of children's books in the household are more important for the reading component. While this result is what we might expect, it is nevertheless striking just how evident this is.

These results also highlight the benefits of splitting cultural capital into two components. For instance, when looking at the sources of social class' indirect effects, we saw that two-thirds of the indirect effects on the formal cultural activities component came from parental cultural capital while for the reading component, two-thirds of the indirect effects came from the number of children's books in the household. Had I combined these two components of cultural capital, we would have seen that half of social class' indirect effects on cultural capital came from parental cultural capital and half came from the number of children's books in the household which would have missed this very interesting and important distinction.

Discussion

I found strong evidence that cultural capital is unequally distributed in early childhood. I found that among almost every single socio-economic factor, those children most disadvantaged had the lowest levels of cultural capital.

I found that both social class and parental education level were significantly associated with a child's cultural capital. Children from higher social classes and those with parents with higher educational qualifications had significantly higher levels of the formal cultural activities and reading components of cultural capital. This result is especially interesting given that I have controlled for the paths from social class and parental education level to parental cultural capital and the number of children's books in the household. This means that both social class and parental education level have a significant effect on a child's cultural capital which is independent of any path which comes through parental cultural capital or the number of children's books in the household. There are therefore other routes through which social class and parental education level contribute to a child's cultural capital.

These findings are in contrast to Sullivan (2001) who found that social class and parental education level's effects on a child's cultural capital were mediated by parental cultural capital. I have modelled for this link between parental cultural capital and both social class and parental education level and found that while a large proportion of social class and parental education level's effects on a child's cultural capital come through parental cultural capital, their effects outside of these channels are still significant.

Our results also provide strong evidence that parental cultural capital is positively associated with a child's cultural capital. For both components of childhood cultural capital, the greater a child's parental cultural capital, the greater that child's cultural capital. For the formal cultural activities component, this was true for every parental cultural capital measure while for the reading component, all but parental creative writing were significantly associated with the child reading more often. Crucially, this result takes into account my proposed path between parental cultural capital and both social class and parental education. I have been able to see how social class and parental education level affect a child's cultural capital through their links to parental cultural capital which has allowed me to better explore this complex relationship between parental cultural capital and a child's cultural capital.

I also found that the greater the number of children's books in the household, the greater the child's cultural capital. This result was found for both the reading and formal cultural activities

components. The result is especially informative given that I have controlled for paths between the number of children's books in the household and social class, parental education level, household income and parental cultural capital.

One of my most interesting results when looking at the accumulation of children's cultural capital was its association with gender. I found that gender had completely contrasting associations with the formal cultural activities and reading components. Similarly to my previous chapter and previous research, I found girls read significantly more often than boys. However, I also found that boys had significantly higher levels of the formal cultural activities component of cultural capital. This finding suggests a real difference in the mechanisms for the accumulation of these two different elements of cultural capital. However, it is worth pointing out that gender had a much bigger effect in the reading part of the model than in the formal cultural activities part. These results suggest that if we were to plan policies aimed at increasing cultural capital in early childhood, we might need to target these differently for boys and girls for both the reading component and the more formal cultural activities component. Boys might need to be targeted more for reading-based policies and girls may need to be targeted more for activities-based policies.

I found that the area a child lives in is associated with their levels of cultural capital in early childhood. I saw mixed results in terms of how the urban-rural classification of where a child lives affects their cultural capital. I found that for the formal cultural activities component, living in a more urban location was significantly more beneficial for children. However, for reading I found that the urban-rural classification had no significant effect. This suggests another important difference between these two components of childhood cultural capital in terms of their accumulation These findings on the relationship between urban-rural classification and a child's cultural capital back up what I found in the previous chapter and we again might explain this result by acknowledging that a child's participation in more formal cultural activities largely requires the child to be at a specific cultural location, such as an art gallery or theatre, whereas reading is an activity which can be done at home regardless of urban-rural classification.. These results suggest that if we were to try and equalise cultural capital among children from urban and rural locations, we would want to focus this on more formal cultural activities over reading practices. More would need to be done to provide children from more remote locations with greater access to cultural activities.

Children living in more deprived locations, as classified by SIMD quintile, were shown to have lower levels of cultural capital. This again suggests that more needs to be done to target policies aimed at increasing childhood cultural capital towards more deprived areas. It is important to note that this finding comes after controlling for a range of other measures of disadvantage such as social class and household income. I also found that the happier parents were with their child's access to activities, the greater the child's cultural capital level. This was found for both the reading and formal cultural activities components. The fact that I found this relationship between a child's reading and their parents' happiness with access to activities is quite surprising given that reading doesn't explicitly rely on access to activities in the same way as the more formal cultural activities do. However, presuming reading and behaviours around reading in early childhood exist solely within the home is possibly quite a naïve view. The amount a child read may be affected by their access to a library, for instance, or their access to children's centres with reading classes.

Our findings on the relationship between a child's cultural capital and the presence of siblings were slightly mixed. I found that being a first born was associated with reading more often but had no significant association with the child's formal cultural activities component. Conversely, having a sibling born since the survey started had no significant association with how often a child read but was associated with higher levels of the formal cultural activities component of cultural capital. This again highlights that there are fundamental differences in the accumulation of these two components of a child's cultural capital. Interestingly, if I remove this new sibling variable from my model, being a first born is still not a significant predictor for the formal cultural activities component. However, if I remove the first born measure from my model, having a sibling born is now a significant, negative predictor for the reading component. This seems to suggest that for formal cultural activities there is something about a new child arriving that is detrimental to participation, whereas for reading it seems that the problem is more to do with the number of children in the family.

My findings here do fit in with my hypothesis that extra children in a family require both extra time and economic resources from parents and that these impinge upon a child's cultural capital levels. This suggests extra support needs to be given to children in larger families if we are to try and equalise cultural capital levels. This might mean reducing costs for cultural activities for families with multiple children through schemes such as group discounts for activities or lowering public transport costs for larger families attending cultural activities. It might also involve schemes which aim to reduce the time pressures such as out of school trips, etc.

We saw mixed results for household income's relationship with a child's cultural capital levels. For the formal cultural activities component, the higher the family's household income, the higher the child's cultural capital levels. However, for the reading component, household income had no significant association. This again suggests that the routes through which the accumulation of my two components of cultural capital occur have fundamental differences. The fact that household income has a positive association with the formal cultural activities component of cultural capital is especially interesting given that I had controlled for other elements of socio-economic background such as social class, parental education and SIMD in this model. There is clearly something which income brings to the accumulation of this component of cultural capital outside of these channels. This may very well simply be the cost of cultural activities. There are undoubtedly many financial barriers to cultural activities and this result seems to support the idea that these financial barriers affect the amount children participate in cultural activities.

I also found evidence that the number of books in the household mediates the effects of household income on a child's reading. This suggests that a household's income is indeed important for a child's reading but its importance seems to lie in the ability to buy children's books. What is interesting is that when the number of children's books in the household is taken into account, household income no longer has this significant association, suggesting that if a household with high income doesn't use this money to purchase children's books, then this advantage will not be felt in how often the child read.

One of the big findings from this section of the model has been the differences in the accumulation of the two different components of a child's cultural capital. While there are a number of indicators which were associated with the reading and formal cultural activities components in similar ways, there were also some key differences in the relationship between these components and my background variables. Parental creative writing, urban-rural classification, household income, gender, whether the child was a first born and whether the child had a sibling born since the survey started all had different relationships with the two components of cultural capital. Many of these are very important differences and show that any policies attempting to equalise cultural capital can't just be a one catch all – they need to acknowledge the differences between these two components. I believe this justifies again my decision to split cultural capital into these two constituent parts.

Educational ability

I now move on to look at the part of the model which focuses on whether a child's cultural capital has any educational benefit. Importantly, this model takes into account all of the sections of the model which I have already shown. Those pathways to parental cultural capital, number of children's books in the household, and the child's cultural capital are all accounted for in this section.

I will now look at whether the child's cultural capital is associated with the child's educational ability at age three and age five. I will control for a wide range of background factors' associations with educational ability as well as all the previous sections of the model. Educational ability at age three and age five were both latent constructs based on the appropriate aged Naming Vocabulary and Picture Similarities t-scores.

Our educational ability latent constructs were both found to be well fitted as displayed

Table 35. Standardised factor loadings for age three and age five educational ability latent constructs.

Variables	Factor loading (standardised)	
	Age 3	**Age 5**
Naming Vocabulary score	0.728	0.796
Picture Similarities score	0.526	0.411

To begin with, I will look at whether cultural capital is associated with educational ability at age three.

Table 36. Standardised direct effects of structural equation model predicting educational ability (age three).

Educational ability (age three)	Coeff.	Stand. Error	z	Sig. level
Social class	0.061	0.029	2.13	0.033
Parental education level	-0.018	0.031	-0.58	0.560
Parental cultural capital				
Parental reading	-0.027	0.026	-1.05	0.296

Parental library usage	-0.002	0.025	-0.10	0.920
Parental creative writing	-0.041	0.024	-1.75	0.080
Importance of cultural activities	-0.068	0.035	-1.96	0.050
Other background variables				
Number of books in the household	0.101	0.026	3.89	0.000
Female	0.242	0.022	11.04	0.000
SIMD	-0.049	0.026	-1.90	0.058
First born	0.153	0.024	6.39	0.000
Sibling born	-0.030	0.024	-1.27	0.202
Urban-rural classification	0.137	0.023	5.95	0.000
Access to activities	-0.001	0.024	-0.05	0.957
Childcare usage	0.036	0.022	1.62	0.105
Household income	0.078	0.029	2.68	0.007
Cultural capital				
Formal cultural activities	0.299	0.070	4.28	0.000
Reading	0.107	0.027	4.03	0.000

N = 3,104

Social class had a significant association with a child's educational ability at age three; those from higher social classes had higher educational ability scores. Parental education level was not significantly associated with educational ability at age three. Only one of my parental cultural capital variables had a significant association with a child's educational ability at age three: the importance placed on cultural activities by their parents. Interestingly, this measure had a negative association with educational ability. The more important parents thought cultural activities were, the lower their child's educational ability was at age three.

The number of children's books in the household, urban-rural classification, household income, gender, and whether a child was a first born were all significant predictors of a child's educational ability at age three. Children who had more children's books, higher household income, lived in more rural locations, were female, and were first borns had higher educational ability.

Having a sibling born since the survey started, how happy parents were with their child's access to activities, childcare usage, and the level of deprivation in the area where the child lives were all non-significant in this section of the model.

After controlling for all of these variables, I found that both the reading and formal cultural activities components of a child's cultural capital were significantly associated with the child's educational ability at age three. The more often they read and the higher the child scored on the formal cultural activities component, the higher their educational ability at age three. The formal cultural activities component was associated with a 0.3 standard deviation increase in educational ability at age three while reading was associated with a 0.1 standard deviation increase.

I now move onto look at the part of the model which looks at which factors are associated with educational ability at age five.

Table 37. Standardised direct effects of structural equation model predicting educational ability (age five).

Educational ability (age five)	Coeff.	Stand. Error	z	Sig. level
Social class	0.057	0.028	2.02	0.044
Parental education level	-0.007	0.030	-0.22	0.824
Parental cultural capital				
Parental reading	-0.007	0.026	-0.27	0.787
Parental library usage	0.011	0.024	0.45	0.652
Parental creative writing	-0.018	0.023	-0.78	0.436
Importance of cultural activities	-0.069	0.035	-1.98	0.047
Other background variables				
Number of books in the household	0.074	0.025	2.91	0.004
Female	0.088	0.022	4.01	0.000
SIMD	-0.024	0.025	-0.96	0.339
First born	0.150	0.023	6.40	0.000
Sibling born	-0.033	0.023	-1.42	0.155

Urban-rural classification	0.134	0.022	6.01	0.000
Access to cultural activities	0.020	0.023	0.84	0.399
Childcare usage	0.022	0.022	1.01	0.313
Household income	0.049	0.028	1.73	0.083
Cultural capital				
Formal cultural activities	0.281	0.068	4.11	0.000
Reading	0.108	0.026	4.14	0.000

N = 3,104

The results from my age five educational ability model were very similar to my age three model. All those measures which were not significantly associated with age three educational ability, were not significantly associated with age five educational ability. All but one of my measures which were significant predictors at age three remained significant predictors of educational ability at age five. The only measure which changed significantly between the two ages was household income which was no longer a significant predictor of educational ability at age five. It is also worth mentioning that the effect size of gender at age five is greatly reduced from age three.

Both of my cultural capital components were again significantly associated with educational ability at age five. The more a child read and the higher the child scored on the formal cultural activities component, the higher their educational ability. The formal cultural activities component was associated with a 0.28 standard deviation increase in educational ability at age five while reading was associated with a 0.1 standard deviation increase, incredibly similar to their age three effects.

Cultural capital as a mediator

One of the key benefits of using structural equation modelling is being able to explore the issue of mediation. This involves looking at whether an independent variable's relationship with an outcome variable can actually be explained by a third variable – the mediator. I have already explored this earlier in the chapter somewhat by looking at whether the number of children's books in the household mediates the effects of household income on a child's reading. I will now explore if any variables' educational effects are mediated by other variables. To do this I will explore the indirect and total effects from the model which will give us an insight into how parental cultural capital, number of children's books in the household and a child's cultural

capital might mediate certain factors' educational effects. I will also examine specifically if the child's cultural capital is a mediating variable for any independent variables' relationships with educational ability by exploring what happens when I remove cultural capital's path to educational ability in the model.

Looking at social class' indirect effects on a child's educational ability, we see even more evidence of its importance for a child's educational ability. For both age three and age five, social class has a significant indirect effect on educational ability as well as its significant direct effect.

Table 38. Social class' unstandardized direct, indirect and total effects on educational ability at age three and age five. *$p < .05$, **$p < .01$, ***$p < .001$. *N = 3,104*

	Educational ability (age 3)			Educational ability (age 5)		
	Direct	Indirect	Total	Direct	Indirect	Total
Social class	0.214* (44%)	0.273*** (56%)	0.486***	0.160* (43%)	0.211*** (57%)	0.371***

We can see from Table 38 that these indirect effects outweigh social class' direct effects. This illustrates that social class' relationship with a child's educational ability is a powerful one which comes through different channels. A child from a high social class background will feel the educational benefits this brings regardless of if this advantage is transmitted into parental cultural capital, children's books or the child's cultural capital. However, they will receive an even greater educational benefit if this social class is successfully directed through these channels.

I found that parental education level had no significant direct association with a child's educational ability at age three or age five. However, parental education level's indirect effects on a child's educational ability were strong and significant at both age three and age five. This resulted in parental education level having a significant total effect on educational ability at both ages once the direct and indirect effects were combined as can be seen from Table 39 below:

Table 39. Parental education level's unstandardized direct, indirect and total effects on educational ability at age three and age five.

	Educational ability (age 3)			Educational ability (age 5)		
	Direct	Indirect	Total	Direct	Indirect	Total
Parental education	-0.095	0.628***	0.532***	-0.029	0.501***	0.472***

*$p < .05$, **$p < .01$, ***$p < .001$; *N = 3,104*

While I have shown parental education level has no significant direct effect on a child's educational ability, it is important not to conclude from these results that parental education level isn't important for a child's educational ability and that children of highly educated parents will feel no educational advantage. Looking at parental education level's total effects, we see that children from parents with higher educational qualifications feel significant educational benefits; however, this comes through other channels rather than through those qualifications in and of themselves.

I now move on to focus specifically on cultural capital's mediating effects by running my model without either of my cultural capital components' link to educational ability. The results from both models are presented below for educational ability at both ages. Model 1 refers to the original model while model 2 is the same model but with my two components of cultural capital's links to educational ability removed.

Table 40. Unstandardized direct effects of structural equation model predicting educational ability at age three and age five. Including (Model 1) and then excluding (Model 2) a child's cultural capital's paths to educational ability.

Educational ability	**Age Three**		**Age Five**	
	Model 1	**Model 2**	**Model 1**	**Model 2**
Social class	-0.214*	-0.323**	-0.160*	-0.240**
Parental education level	0.095	-0.307*	0.029	-0.277*
Parental cultural capital				
Parental reading	-0.199	0.211	-0.041	0.271*

Parental library usage	-0.019	0.381*	0.066	0.370**
Parental creative writing	-0.692	-0.028	-0.245	0.264
Importance of cultural activities	-0.322*	0.233*	-0.263*	0.159
Other background variables				
Number of books in the household	0.616***	1.099***	0.365**	0.727***
Female	2.558***	2.604***	0.751***	0.763***
SIMD	-0.186	-0.302**	-0.074	-0.157*
First born	1.612***	1.881***	1.284***	1.476***
Sibling born	-0.340	-0.531*	-0.300	-0.438*
Urban-rural classification	0.449***	0.376***	0.358***	0.297***
Access to cultural activities	0.007	-0.193	-0.088	-0.241*
Childcare usage	0.400	0.461	0.197	0.237
Household income	0.033***	0.047***	0.017	0.027**
Cultural capital				
Formal cultural activities	6.140***		4.691***	
Reading	0.752***		0.614***	

*$p < .05$, **$p < .01$, ***$p < .001$; *N = 3,104*

While a number of variables' coefficients and z scores were affected by the removal of cultural capital's links to educational ability at age three, I will only report on those associations which moved from non-significant to significant and vice-versa.

Once the formal cultural activities and reading components of cultural capital were removed as paths to educational ability at age three, parental education level was a significant predictor of educational ability. In the original model, parental education level had no significant association with educational ability at age three but once cultural capital's educational links were removed, the higher educated a child's parents were, the higher the child's educational ability was. We see therefore that parental education level's effect on educational ability is 'fully mediated' by the child's cultural capital (Little et al., 2007). Therefore, my results suggest that any educational benefit which parental education level might have here is as a result of its positive relationship with cultural capital.

The removal of cultural capital's educational links also impacted on parental cultural capital's association with educational ability at age three. After being non-significant in the original model, parental library usage became a significant predictor of a child's educational ability at age three; children with parents who used the library more had higher educational ability scores. The other parental cultural capital measure which was affected by the removal of cultural capital's educational path was how important parents thought cultural activities were. This resulted in a very interesting change. In the original model, the importance placed on cultural activities by parents had a negative association with a child's educational ability at age three whereas once cultural capital's educational link is removed, this variable now has a significant positive association with educational ability at age three. Now, the more important parents think cultural activities are, the higher their child's educational ability.

This type of mediation with a sign change is referred to as inconsistent mediation by Little et al (2007). Inconsistent mediation is thought of as being affected by suppression (MacKinnon et al., 2000) although suppression usually refers to mediation which increases the magnitude of a relationship rather than reverses it. Little et al (2007, p. 211) provide an interpretation for this type of mediation with a sign change by stating that it shows that the independent variable contains "two sources of variance that reflect two opposing channels" by which it influences the outcome variable. In my example, this means that having parents who thought cultural activities were important has a positive pathway to educational ability which is mediated by the child's cultural capital and that once this mediated pathway to educational ability is taken into account, parental cultural importance also has a negative relationship with educational ability. It seems therefore as though parental cultural importance's positive educational effect comes from its positive relationship with the child's cultural capital but once I account for this relationship with the child's cultural capital, it seems that any importance placed upon cultural activities which does not transmit to the child's own cultural capital is actually detrimental to the child's educational ability scores.

The level of deprivation of the area a child lives becomes a significant predictor of a child's educational ability at age three once cultural capital's educational links are removed. Whereas in the original model it was non-significant, in this model the more deprived an area the child lives, the lower their educational ability at age three. Having had a sibling born since the start of the survey also becomes a significant predictor of a child's educational ability at age three once cultural capital's educational path is removed. Now, having had a sibling born is significantly associated with lower educational ability at age three.

Interestingly, all of the associations which became significant once cultural capital's links to age three educational ability were removed are repeated for age five educational ability. Parental education level, parental library usage, level of deprivation and having had a sibling born since the survey started all went from non-significant to significant predictors of educational ability at age five like they did at age three. Similarly to age three, the importance parents placed on cultural activities was no longer a significant negative predictor of educational ability at age five once cultural capital's links to educational ability were removed. However, unlike at age three, it did not become a significant positive predictor although it was very close to being so ($p = 0.051$).

As well as these repeated findings, there are also some distinct variables which become significant predictors in the age five model once cultural capital's educational pathway is removed from the model which did not occur at age three. Parental reading was one such variable. After having no significant association in the original model, the removal of cultural capital's educational pathway resulted in parental reading being a significant predictor of age five educational ability. Having parents who read now resulted in higher educational ability at age five. This result means that at age five, two of my four parental cultural capital variables (parental reading and parental library usage) are significant and positive predictors of educational ability when cultural capital's educational links aren't taken into account despite none of them being significant positive predictors when cultural capital's educational link is included.

How happy parents were with their child's access to activities also became a significant predictor of educational ability at age five once cultural capital's educational links were removed from the model. Once cultural capital's links were removed, the happier parents were with their child's access to activities, the greater their child's educational ability at age five. Household income also went from having no significant association with educational ability at age five to having a significant association once cultural capital's educational links are removed from the model. After cultural capital's links were removed, the higher a household's income, the higher the child's educational ability at age five. It is worth pointing out that household income was already significant in the age three model.

Finally, I introduced a pathway between educational ability at age three and educational ability at age five. This model essentially reflects the progress in the child's educational ability between age three and age five and which factors are associated with any change. This will

help determine if a child's cultural capital is associated with any changes in educational ability between age three and age five. Below you can see a diagram of the full model including this link between educational ability at age three and age five.

Table 41. SEM diagram for full model. Only pathways significant at 5% level shown. Circles = latent constructs; rectangles = observed variables.

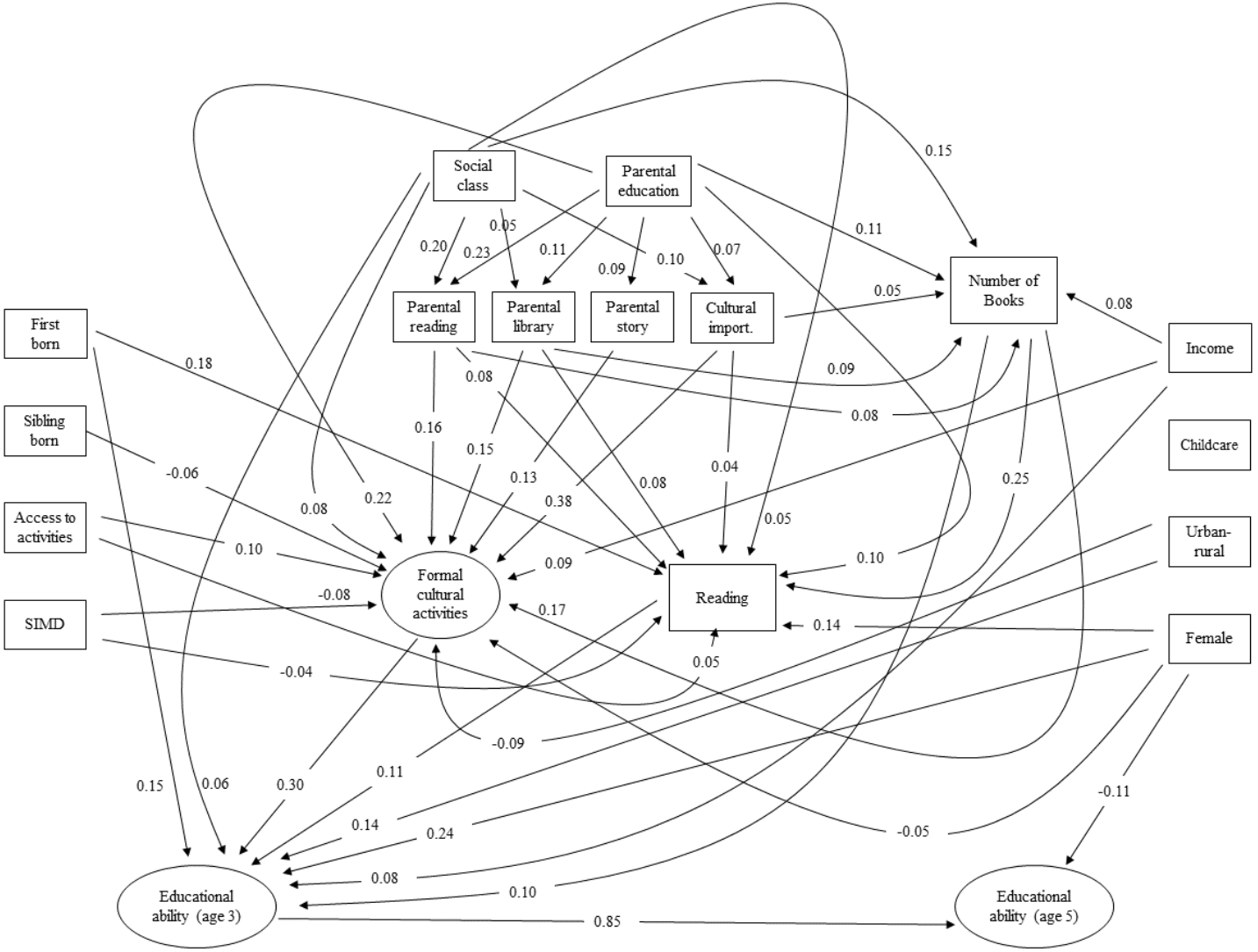


Table 42. Unstandardized direct effects of model predicting educational ability at age five, including pathway from educational ability at age three

Educational ability (age five)	Coeff.	Stand. Error	z	Sig. level
Social class	0.008	0.027	0.31	0.760
Parental education level	0.007	0.029	0.26	0.795
Parental cultural capital				
Parental reading	0.015	0.024	0.62	0.533
Parental library usage	0.013	0.023	0.57	0.567
Parental creative writing	0.015	0.022	0.67	0.505
Importance of cultural activities	-0.015	0.032	-0.48	0.630
Other background variables				
Number of books in the household	-0.006	0.025	-0.22	0.823
Female	-0.107	0.024	-4.41	0.000
SIMD	0.014	0.024	0.59	0.557
First born	0.029	0.024	1.22	0.224
Sibling born	-0.008	0.022	-0.38	0.707
Urban-rural classification	0.026	0.023	1.16	0.247
Access to cultural activities	0.020	0.022	0.90	0.366
Childcare usage	-0.007	0.021	-0.36	0.719
Household income	-0.012	0.027	-0.44	0.662
Cultural capital				
Formal cultural activities	0.046	0.069	0.68	0.499
Reading	0.024	0.025	0.93	0.351
Educational ability (age 3)	0.852	0.042	20.13	0.000

*$p < .05$, **$p < .01$, ***$p < .001$; *N = 3,104*

Once we have controlled for age three educational ability, only the child's gender was associated with progress in educational ability. The educational ability of boys increased significantly more than girls between age three and age five. Girls still have significantly higher

educational ability scores at age five, as shown by the model before educational ability at age three was included; however, the initial gap between boys and girls at age three narrows by age five. Both the child's reading and formal cultural activities had no significant association with change in educational ability between age three and age five.

Discussion

Our key result from this section of the model is that a child's cultural capital is educationally beneficial in early childhood. At both age three and age five, the more cultural capital a child had, the greater their educational ability. Both the reading and formal cultural activities components have their own distinct educational benefits, independent of each other and a host of background factors. This backs up what I had found in the previous chapter but importantly controls for a number of other crucial potential pathways.

My finding that cultural capital is educationally beneficial is even more important given that I have shown earlier in the same model that cultural capital is an unequal resource. Cultural capital has been shown to be most readily accessible to those children most advantaged by socio-economic circumstances while those children who accumulate the least cultural capital tend to be those who were already disadvantaged in many other ways. Because of this fact, cultural capital's educational benefits might be seen as a contributing factor towards educational inequalities in early childhood.

However, despite finding cultural capital had a significant effect on a child's educational ability at both age three and age five, once we included a pathway from educational ability at age three to age five, the child's cultural capital no longer had a significant effect on educational ability at age five. This indicates that the child's cultural capital had no effect on the progress of their educational ability between age three and age five. It appears cultural capital's main educational benefits are already in place when the child is aged three. It is important to note that the only factor within the model that had a significant effect on the child's educational ability at age five was gender with boys' educational ability increasing between age three and five.

I have again found evidence that both the reading and formal cultural activities components of cultural capital are educationally beneficial. I believe this provides strong evidence against the claims of other scholars (Crook, 1997; De Graaf et al., 2000) that only the reading element of cultural capital provides educational benefits.

It is important to note that despite cultural capital's educational effect, a number of key socio-economic factors were still associated with the child's educational ability. This indicates that while I have shown cultural capital may indeed be a cause of educational inequalities in early childhood, it is by no means the sole contributing factor. In particular, the educational effects of social class are very noteworthy. Children from higher social classes have higher educational ability at age three and age five even after I control for social class' paths to the number of children's books in the household and both the child and parents' cultural capital. Social class has strong indirect effects on educational ability through its relationship to these other channels but yet it still has a significant educational effect which cannot be explained by these channels.

A huge benefit to structural equation modelling is that I was able to explore the issue of mediation in a much more sophisticated manner to the previous chapter. There are a number of key demographic variables whose relationship to a child's educational ability is mediated by the child's cultural capital. Perhaps the most important of these variables is parental education level.

I found that parental education level's educational effects on a child were 'fully mediated' (Little et al., 2007) by the child's cultural capital. Children from parents with higher qualifications had higher levels of educational ability but these educational benefits came entirely through parental education level's path to a child's cultural capital. It seems that a key educational benefit of having parents with higher educational qualifications is the increased likelihood of reading books every day and being taken to more formal cultural activities. Highly educated parents who do not transmit their advantage to their children via the accumulation of cultural capital in early childhood will not see their children feel the educational benefits of their high educational qualifications. In this way, we can see how cultural capital might be seen as a way of transferring a family's socio-economic benefits into educational benefits for their child.

Parental cultural capital's link to educational ability forms a fascinating part of my results. Looking solely at direct effects, I found that only one parental cultural capital variable was significantly associated with a child's educational ability – how important parents thought cultural activities were. However, this variable was negatively associated with a child's educational ability; the more important parents thought cultural activities were, the lower the child's educational ability. We might therefore be tempted to conclude that parental cultural capital levels have no impact on a child's educational ability. We might even be tempted to go

further and suggest that parental cultural capital has a negative effect on a child's educational ability and that more would need to be done to support children of parents high in cultural capital. However, once I explored the extent to which a child's cultural capital mediated parental cultural capital's educational effects, we saw a vastly different picture.

These results suggested that a child's cultural capital completely mediates any educational benefits that parental cultural capital brings. It shows very clearly that the importance of parental cultural capital for a child's educational success is entirely dependent on it being utilised in the child's accumulation of cultural capital. If a parents' cultural capital translates into the child's cultural capital then parental cultural capital's educational benefits come to fruition. I believe this result demonstrates the importance of the transmission of cultural capital in early childhood, without which parents can't pass on their cultural capital benefits. Without the child experiencing cultural activities and reading for themselves there is no positive benefit to parental cultural capital in terms of early educational ability; indeed, my results seem to suggest that parental cultural capital actually would have a negative effect here.

Our result which showed the importance parents placed on cultural activities having a negative effect on educational ability seems to suggest there is something educationally detrimental about a child having parents who value the importance of cultural activities but that child not getting to actually participate in those activities. While this result is certainly strange, what it does help emphasize is the importance of action in the transmission of cultural capital. Simply having parents who value the importance of cultural activities is not enough, this must translate into participation in said cultural activities; the transmission of cultural capital seems very much like an active process in early childhood.

Household income was another background measure whose educational effects were in some way mediated by the child's cultural capital. At age five, household income does not have a significant direct effect on educational ability; however, looking at my model without cultural capital's educational links, we see that at age five, household income's effect on educational ability is entirely mediated by cultural capital. This suggests that unless a family's household income is used to provide the child with increased cultural capital, then this money will not in and of itself have an educational benefit on the child at age five. However, at age three household income does have a significant direct effect on educational ability. This suggests that at age three, household income has educational benefits outside of its ability to pay for cultural activities.

The deprivation level of the area where the child lives is another variable whose relationship to educational achievement was mediated by cultural capital; once I removed cultural capital's educational link, deprivation level's direct effects on educational ability were significant after being non-significant to begin with. It seems therefore that what is educationally beneficial about living in a lesser deprived area and conversely what is negative about living in a more deprived area is to do with the cultural experiences and opportunities that this offers or restricts. I had initially thought this might be explained by the fact that more deprived areas may lack access to cultural activities. However, after including a path between SIMD and how happy parents were with access to cultural activities in a separate model, the level of deprivation's effect on educational ability was still mediated by cultural capital. This suggests two things: either the level of deprivation affects a child's cultural capital in a way outside of a lack of access; or my variable measuring how happy parents were with access to activities isn't an entirely accurate proxy for a child's access to cultural activities. It is likely that actually both of these reasons may in fact be true.

Another measure whose educational effects are fully mediated by the child's cultural capital is how happy parents were with access to activities for their children. This variable had no significant direct effect on a child's educational ability at either age but once cultural capital's link to educational ability was removed, happiness with access to activities was a significant predictor of educational ability at age five although not at age three. This seems a rather straightforward result to explain; having good access to activities is only beneficial for a child's educational ability if it results in the child actually using those activities. Conversely, if a child's access to activities is limited, this will negatively affect the child's educational development but only if this lack of access results in lower participation in cultural activities.

When I removed cultural capital's link to educational ability, having had a sibling born since the survey started had a significant negative effect on a child's educational ability at age three and age five despite initially being non-significant. This meant that any detrimental educational effect having a sibling born could have was seemingly down to the detrimental effect having a new sibling born had on a child's cultural capital. This shows how important it is that policies help to equalise access to cultural activities for children in larger families and for children with new-born siblings.

6. Changes in cultural capital over early childhood

One of the major benefits of having longitudinal data is being able to look at change (Caruana et al., 2015). In this chapter, I will explore whether the accumulation of cultural capital and the educational effects of cultural capital are constant over early childhood. I also want to explore whether any changes in cultural capital across this period are largely universal changes or whether they vary among individuals according to certain factors.

Changes in cultural capital over time

To begin with I will look at whether there are any changes in a child's cultural capital over time before looking at whether any factors are associated with changes in the child's cultural capital over time.

Cultural voraciousness and cultural omnivorousness

First, I will explore changes in cultural omnivorousness and voraciousness between age two and four. Table 43 shows the distribution of cultural omnivorousness from age two to four.

Table 43. Distribution of cultural omnivorousness (age two and age four).

	Age 2		Age 4	
Cultural Omnivorousness	***Frequency***	***Percent***	***Frequency***	***Percent***
No activities	510	11.3 %	122	3.1 %
One activity	1,393	30.9 %	516	12.9 %
Two activities	1,439	31.9 %	1,037	26.0 %
Three activities	861	19.1 %	1,292	32.3 %
Four activities	309	6.8 %	1,027	25.7 %
Total	**4,512**	**100 %**	**3,994**	**100 %**

One noticeable difference between the two ages is that much more children participated in one or fewer different cultural activities at age two than age four. At age two, 42.2% of the children had participated in one or fewer cultural activities. However, by age four this percentage had shrunk considerably to 16%. Consequently, the number of children with high levels of cultural omnivorousness grew considerably between age two and age four. At age two, around a quarter of children (25.9%) participated in three or more different cultural activities; however, by age four, this percentage had more than doubled to 58.1%.

We find a similar pattern when looking at cultural voraciousness. Figure 22 shows the distribution of the cultural voraciousness measures across age two and age four. Similarly to cultural omnivorousness, we see that the distribution of cultural voraciousness has clearly shifted towards higher cultural voraciousness values at age four.

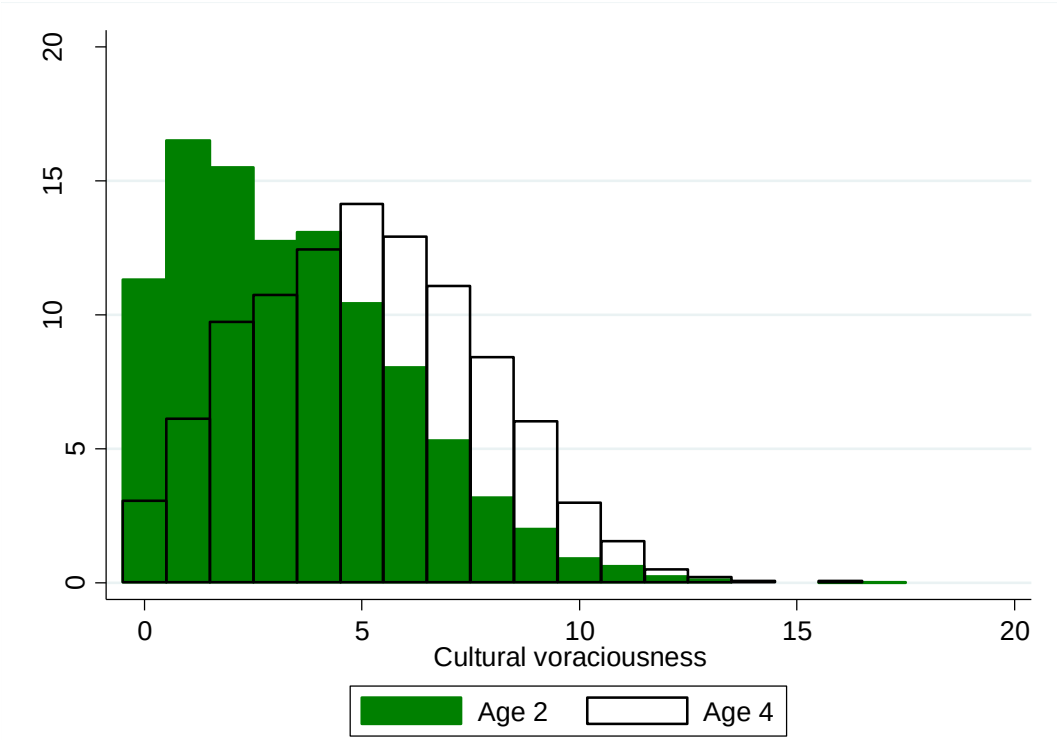


Figure 22. Distribution of cultural voraciousness at age two and age four (%). Green - age two; white - age four. N = 4,508 at age 2 and N = 3,994 at age 4.

There seems to be some clear evidence of a change in cultural omnivorousness and cultural voraciousness levels between age two and age four with an upwards trend noticeable. However, what is not clear from the descriptive statistics I have shown is the amount of change individuals experience in their cultural omnivorousness between age two and age four. For

example, we cannot tell whether everyone experiences a similar level of change between the two sweeps.

I therefore decided to create variables which show how much change in cultural omnivorousness and cultural voraciousness each child experienced from age two to age four. Positive values indicate an increase in cultural omnivorousness or cultural voraciousness as the child ages, negative values indicate a decrease and zero means the child had the same level at age two and age four. Below in Table 44 you can see the distribution of this variable for cultural omnivorousness:

Table 44. Change in cultural omnivorousness between age two and age four. Age four minus age two.

Change in cultural omnivorousness	Freq.	Percent	
-3	6	0.2 %	
-2	50	1.3 %	Decrease (9.8%)
-1	326	8.3 %	
0	1,107	28.2 %	No change (28.2%)
1	1,443	36.7 %	
2	784	19.9 %	Increase (62.1%)
3	196	5.0 %	
4	20	0.5 %	
Total	3,932	100 %	

While you can see from the above table that the majority of children (62.1%) experience some kind of increase in cultural omnivorousness between age two and age four, this is certainly not a uniform increase. You can also see that over a quarter of children (28.2%) see no change in their cultural omnivorousness between sweep 2 and sweep 4.

I now move on to look at the change in cultural voraciousness between age two and age four. Figure 23 shows that the distribution of change in cultural voraciousness looks to be normally distributed. Looking at the mean cultural voraciousness change, we find it is a change of 1.7. This fits with my graph which looks to be normally distributed around about this figure.

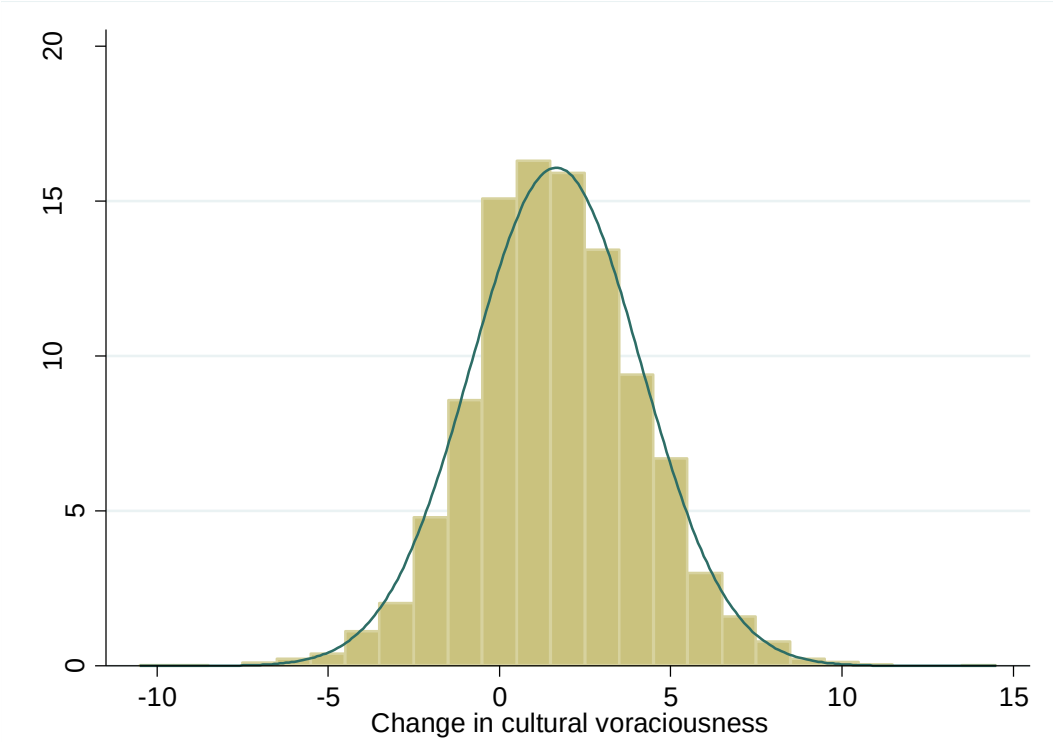


Figure 23. Distribution of change in cultural voraciousness between age two and age four (%). Line of normal distribution added. N = 3,931.

Given that I have seen some evidence to suggest that there are slight changes in cultural omnivorousness and cultural voraciousness between the two sweeps, I wanted to explore whether any background factors helped predict a child's change in cultural omnivorousness from sweep 2 to sweep 4.

To do this I ran regressions on the variables I created which showed the change score in cultural omnivorousness and cultural voraciousness from sweep two to sweep four. I controlled for parental cultural capital and those background variables I have previously used in my earlier models using cultural omnivorousness and cultural voraciousness. The table of the regression results is below:

Table 45. Regression analysis of factors predicting change in cultural omnivorousness and cultural voraciousness between age two and age four. **p< .05, **p<.01, ***p<0.001.*

Change in cultural capital	Cultural Omnivorousness Change		Cultural Voraciousness Change	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.049	0.057	0.152	0.133
3. Small employers etc	0.008	0.078	0.095	0.180
4. Lower supervisory and technical occupations	0.133	0.073	0.361*	0.169
5. Semi-routine and routine occupations	-0.036	0.067	0.047	0.155
6. Never worked	0.103	0.164	0.572	0.380
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.049	0.048	-0.268*	0.110
Higher Grade or equivalent	0.003	0.087	-0.225	0.202
Standard Grade or equivalent	-0.096	0.069	-0.256	0.160
Rural-urban classification				
Large urban (*reference*)				
Other urban	0.031	0.044	0.111	0.102
Small, accessible towns	0.212**	0.064	0.413**	0.147
Small remote towns	0.150	0.103	0.487*	0.239
Accessible rural	0.017	0.061	-0.059	0.141
Remote rural	0.017	0.081	-0.024	0.187
Number of parents who read	0.011	0.027	0.038	0.063
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	-0.207***	0.039	-0.240**	0.090
Use library often	-0.337***	0.055	-1.065***	0.126

Parental creative writing	-0.107	0.056	-0.099	0.130
Female	0.032	0.035	0.022	0.082
First born	0.049	0.039	0.221*	0.090
Sibling born	-0.024	0.041	-0.178	0.095
Household income	0.005*	0.002	0.008	0.004
Number of books in the house				
0-10	-0.245**	0.084	-0.626**	0.194
11-20	-0.009	0.060	-0.273*	0.139
21-30	-0.030	0.050	-0.034	0.115
30+ *(reference)*				
Importance of cultural activities				
Not at all important	0.655***	0.096	0.961***	0.223
Not really important	0.380***	0.057	0.408***	0.132
Neither important nor unimportant	0.263***	0.056	0.204	0.130
Quite important	0.145**	0.051	0.136	0.118
Very important *(reference)*				
Access to cultural activities				
Very happy with the range of activities *(reference)*				
Quite happy with the range of activities	0.190***	0.049	0.307**	0.113
Would like child to have slightly more access	0.076	0.053	0.192	0.123
Would like child to have much more access	0.090	0.065	0.208	0.151
SIMD				
0.9449 - 7.7446 - least deprived (*ref*)				
7.7472 - 13.5627	-0.058	0.055	-0.163	0.127
13.5640 - 21.0436	-0.068	0.057	-0.081	0.133
21.0521 - 33.6982	-0.152*	0.062	-0.310*	0.143
33.7252 -89.0941 – most deprived	-0.062	0.064	-0.152	0.148
Use childcare	0.057	0.038	0.118	0.089
Constant	0.500***	0.110	1.326***	0.256
N	3,560		3,559	

Neither social class nor parental education level have any significant effect on a child's change in cultural omnivorousness. However, both have a significant association with changes in a child's cultural voraciousness. Children from NS-SEC social class category 4 – lower supervisory and technical occupations – saw more of an increase in their cultural voraciousness from age two to age four than children from the highest social class category. Children whose parents' highest educational qualification was a vocational degree saw less of an increase in their cultural voraciousness compared to children whose parents had a degree or equivalent.

The urban-rural classification of where a child lives had a significant association with changes in both cultural omnivorousness and cultural voraciousness. Compared to children living in a large urban location, children living in small accessible towns saw significantly more of an increase in cultural omnivorousness and cultural voraciousness over time. For cultural voraciousness, children living in small remote towns also saw more of an increase compared to children living in large urban areas.

Interestingly, parental library usage was a negative predictor of a child's change in cultural omnivorousness and cultural voraciousness. Compared to children whose parents never used the library, children whose parents used the library sometimes or often experienced less of an increase in their cultural omnivorousness and cultural voraciousness; children whose parents used the library often had less of an increase in cultural omnivorousness compared to children whose parents don't use the library – by around a third of an activity. A similar pattern was found for another parental cultural capital measure – how important parents think cultural activities are. Children whose parents thought cultural activities were less important saw more of an increase in cultural omnivorousness and voraciousness between age two and age four; nearly two-thirds of an activity in their cultural omnivorousness compared to children whose parents thought cultural activities were very important. The other two parental cultural capital variables – parental reading and parental creative writing – had no significant effect.

To better explore how these parental cultural capital variables were associated with change, I ran graphs showing the mean scores of cultural omnivorousness and cultural voraciousness across time categorised by these parental cultural capital measures. Figure 24 shows how cultural voraciousness scores change over time by parental library usage while Figure 25 shows how cultural voraciousness scores change over time by how important parents thought cultural activities were.

We can see from Figure 24 that while cultural voraciousness is highly associated with parental library usage at both ages, the gap between children whose parents use the library often and other children narrows between age two and age four. For instance, the gap in cultural voraciousness score between children whose parents use the library often and those children whose parents don't use the library is 3.54 at age two but has reduced to 2.45 at age four. While you can see that higher parental library usage is associated with less of an increase in cultural voraciousness, you see that children whose parents use the library often still experience an increase in cultural voraciousness between age two and four.

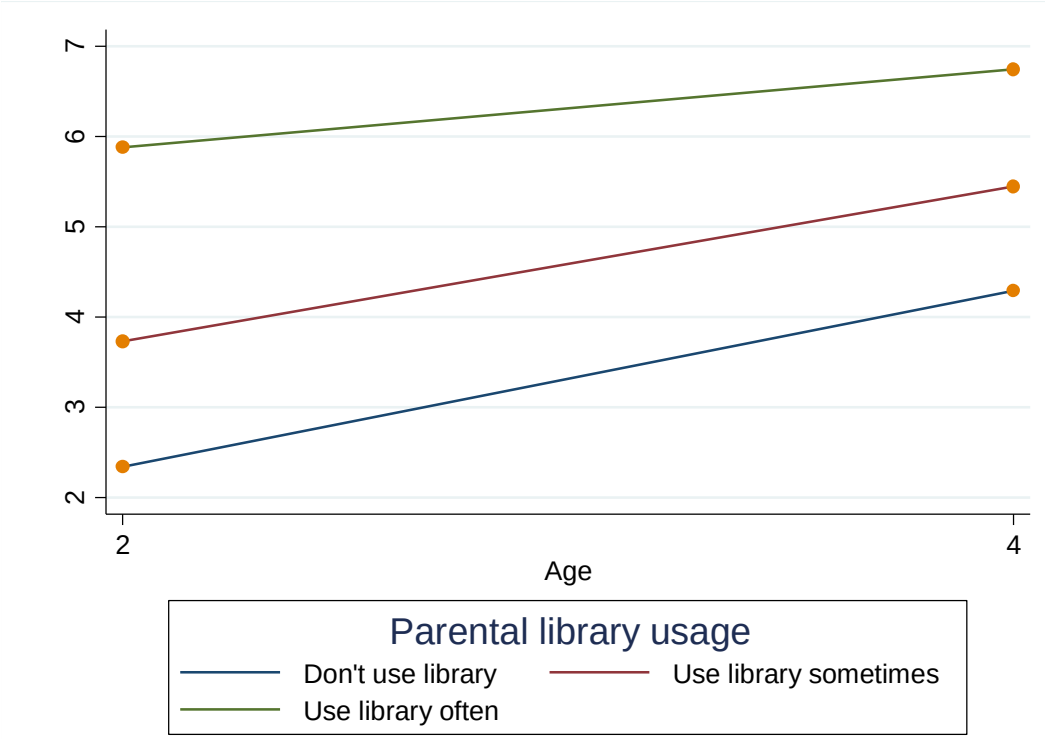


Figure 24. Mean cultural voraciousness by parental library usage (age two) over time (age two and age four).

We see a very similar pattern when we look at Figure 25 which shows us mean cultural omnivorousness scores over time, categorised by how important a child's parents thought cultural activities were. We can see that the importance parents placed upon cultural activities is highly associated with cultural omnivorousness at age two and age four with children's cultural omnivorousness ranked in order of the five categories of response. However, we see that the gap in cultural omnivorousness between children whose parents thought cultural activities were 'very important' and those who thought they were 'not at all important' narrows between age two and age four. The gap in cultural omnivorousness score between these children was 1.41 at age two, yet has nearly halfed to 0.74 at age four. We see that even though

the gap narrows there is still a noticeable divide between those children whose parents thought cultural activities were ‘very important’ or ‘quite important’ and all other children.

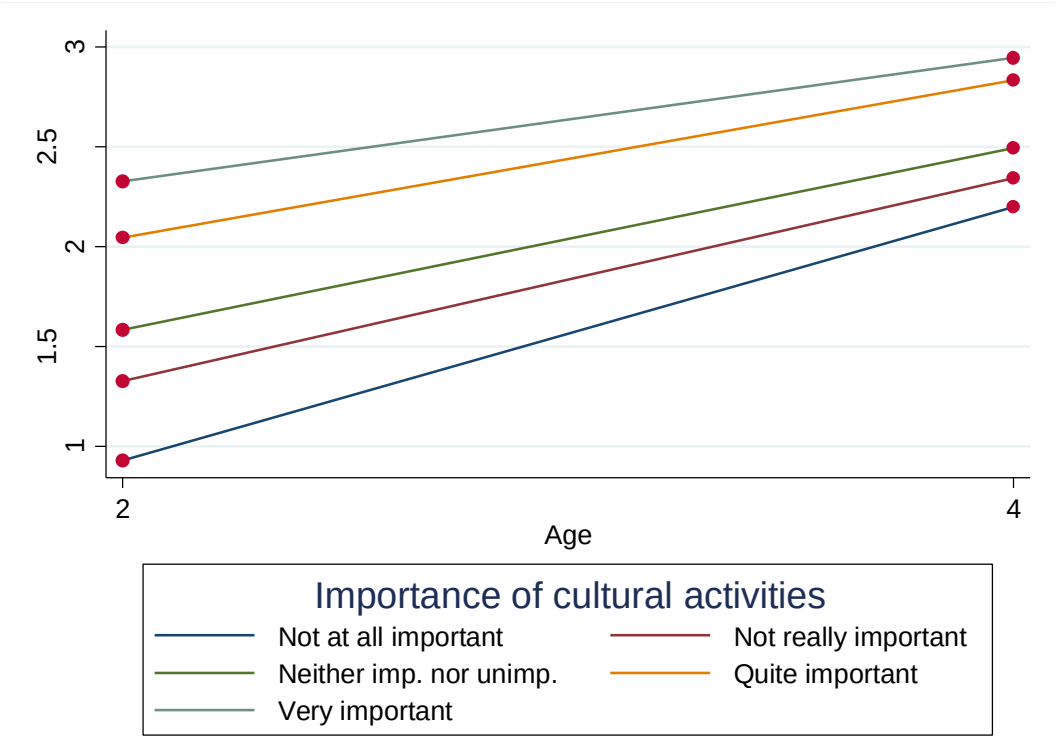


Figure 25. Mean cultural omnivorousness over time by how important parents thought cultural activities were.

Access to cultural activities was also a significant predictor of change in cultural omnivorousness and cultural voraciousness; compared to children whose parents were very happy with the range of activities, children whose parents were quite happy saw greater increases in both measures.

The level of deprivation in which the child lives also affects the child’s change in cultural omnivorousness and voraciousness. Compared to those children living in the least deprived quintile, children living in the second most deprived quintile experienced less of an increase in their cultural omnivorousness between age two and age four. Household income was a significant predictor of change in cultural omnivorousness; those with higher household incomes saw greater increases in their levels of cultural omnivorousness between the two sweeps. This had no significant association with changes in cultural voraciousness. First born children experienced a greater increase in their cultural voraciousness between age to and age four. There was no significant association for changes in cultural omnivorousness.

The number of children's books in the household also had a significant association with changes in a child's cultural omnivorousness and voraciousness over time. Compared to children who had over 30 books in the household, children with 10 or less books experienced less of an increase in cultural omnivorousness (by around a quarter of an activity) while children with 20 or less books experienced less of an increase in cultural voraciousness. Looking at Figure 26 which shows mean cultural omnivorousness over time categorised by number of children's books in the house, we see a visual representation of children with 10 books or less experiencing less of an increase in their cultural omnivorousness than children with more books between age two and age four. The gap in cultural omnivorousness between these children and all other children widens between age two and age four.

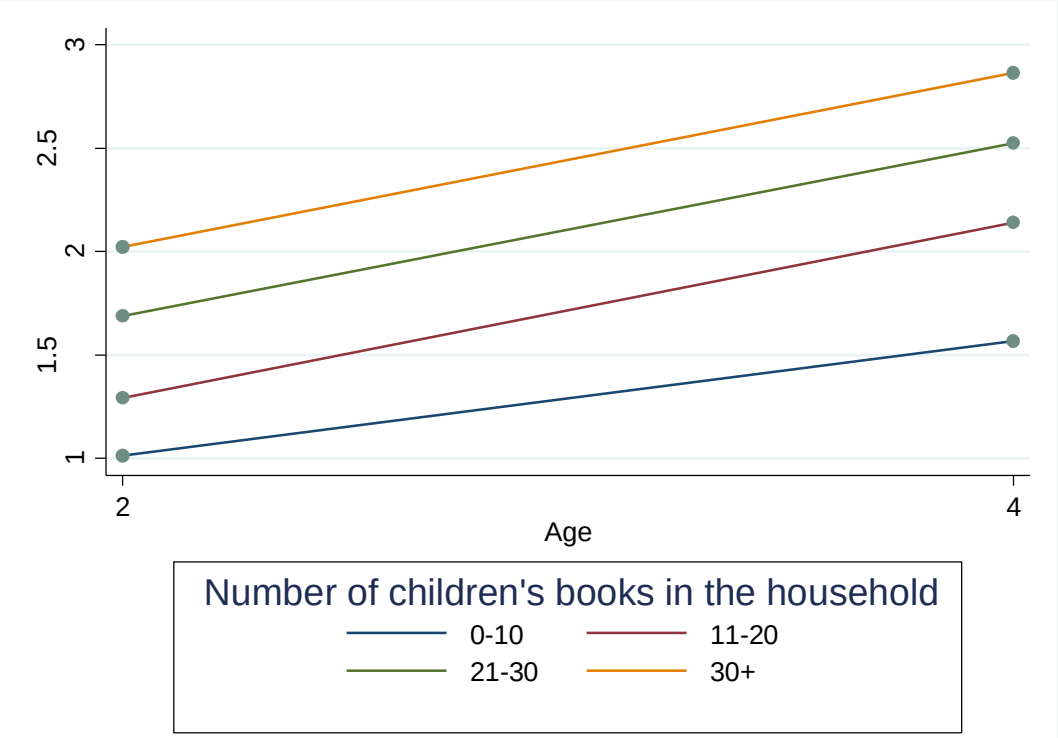


Figure 26. Mean cultural omnivorousness over time by the number of children's books in the household at age three.

The child's gender, childcare usage and whether the child had a sibling born since the survey started had no significant association with changes in cultural omnivorousness or voraciousness.

Perhaps the most intriguing result from this regression is the effect parental library usage and how important parents thought cultural activities were had on a child's change in cultural omnivorousness and cultural voraciousness from age two to age four. Having parents who didn't use the library at age two and whose parents thought cultural activities were less

important were associated with greater increases in cultural omnivorousness and voraciousness than parents who did use the library and who thought cultural activities were important. This result seems initially very strange – two of the largest predictors of cultural omnivorousness and voraciousness at both age two and age four is now a significant negative predictor of increases in both.

One possible explanation for this is that these two elements of parental cultural capital were shown in Chapter 1 to have a very strong association with cultural voraciousness and cultural omnivorousness at age two and children with higher cultural omnivorousness and cultural voraciousness scores at age two experience less of an increase by age four in these elements of cultural capital. Indeed, if I include age two cultural omnivorousness and cultural voraciousness in the respective models of change then we see they are huge negative predictors of change. The lower a child's cultural omnivorousness at age two, the larger the increase they will see in their cultural omnivorousness by age four.

We can see further evidence of this by looking at the mean change in cultural omnivorousness between age two and age four, separated by the child's initial cultural omnivorousness. From Table 46 below you can see that the amount of change in cultural omnivorousness is inversely related to a child's initial level of cultural omnivorousness.

Table 46. Mean change in cultural omnivorousness between age two and age four by initial cultural omnivorousness score at age two.

Cultural omnivorousness at age two	Mean change in cultural omnivorousness	Mean score at age four	Freq.
0	+ 1.63	1.63	422
1	+ 1.24	2.24	1,181
2	+ 0.78	2.78	1,266
3	+ 0.30	3.30	780
4	- 0.45	3.55	283
Total	+ 0.82	2.65	3,932

One possible explanation for this result is that those children with high levels of cultural omnivorousness at age two have less scope to increase their cultural omnivorousness and cultural voraciousness due to the bounded nature of my measures; the maximum number of different activities a child can be recorded as having done for cultural omnivorousness is four.

Over a quarter of children (26%) at age two score three or above on my cultural omnivorousness measure. For these children, the maximum increase they can experience is a score of one. In contrast, for the 42% of children who participated in one or fewer different activities at age two, there is the possibility of them scoring above one in terms of increase in cultural omnivorousness.

As discussed in the Methods, I do have a variable for parental library usage measured when the child is aged six. As also discussed, there are theoretical and methodological issues with using this variable and so I will present the results here cautiously (results in appendix- Tables 70 and 71).

I found that if I substituted this age six parental library usage variable into the model in the place of the age two parental library usage measure then I found the opposite relationship; children whose parents used the library experienced greater increases in both cultural voraciousness and cultural omnivorousness between age two and age four. If both measures of parental library usage were included in the model I found that the age two measure still had a significant negative association with change in cultural omnivorousness and voraciousness over time and the age six measure was still significantly and positively associated with change in both cultural voraciousness and omnivorousness. I also included a measure for change in parental library usage and this was positively associated with both change in cultural voraciousness and cultural omnivorousness; the more parents increased their library usage over time, the more children's cultural capital increased over time.

Figure 27 uses my two parental library usage measures to create a measure which details whether parents: used the library in both measures; used the library at age two but no longer; use the library at age six but didn't at age two; and those who didn't use the library in either sweep. This provides us with some fascinating results. We see that for those children whose parents either used the library in both sweeps or didn't use the library in either sweep, their changes in cultural omnivorousness are very similar. However, what is fascinating is the difference between children whose parents used the library in one sweep but not the other. At age two, children whose parents used the library at age two but not at age six had much higher cultural omnivorousness than those children whose parents didn't use the library at age two but did so at age six. However, when we look at age four, we see that the difference in cultural omnivorousness between these children has converged so much that those children whose parents didn't use the library at age two but did at age six score higher on cultural

omnivorousness at age four. This is a dramatic change from age two and seems to indicate that changes in parental cultural capital over childhood can result in changes in the child's cultural capital.

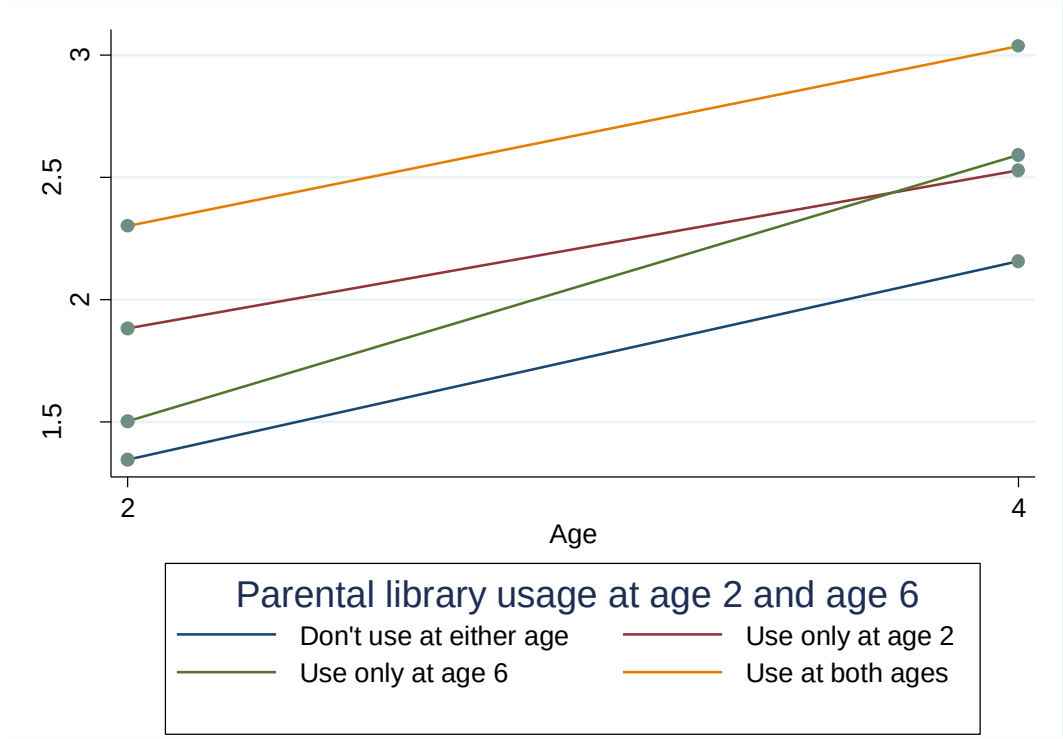


Figure 27. Mean cultural omnivorousness over time by combined measure of parental library usage between age two and age six.

Reading

Because I have more than two time points with data on how often a child read, I could not create a simple change variable as we had done for cultural omnivorousness and cultural voraciousness. I instead therefore decided to explore change in a child's reading using the multilevel model for change (Singer and Willett, 2003). This technique allows us to fully benefit from having four time points when reading was measured and allows me to explore both within-person and between-person variation in reading over time.

I will begin by running an unconditional means model (Model 3.0) and an unconditional growth model (Model 3.1). These are simple models which allow me to see where the variation in the dependent variable lies and also provides me with a baseline model to compare subsequent models against (Singer and Willett, 2003).

Table 47. Multilevel analysis of child's reading. Model 3.0 = unconditional means model; Model 3.1 = unconditional growth model; Model 3.2 = Full model. N = 3,778.

Reading	Model 3.0		Model 3.1		Model 3.2	
	Coef.	S.E	Coef.	S.E	Coef.	S.E
Constant	6.319	0.02	6.445	0.04	6.324	0.13
Age			-0.036	0.01	-0.048	0.02
Variance components						
Level 1						
Within-person	1.554	0.02	1.379	0.02	1.383	0.02
Level 2						
Initial status	0.873	0.03	2.037	0.16	1.849	0.15
Rate of change			0.108	0.01	0.115	0.01
Covariance			-0.350	0.04	-0.384	0.04
Log Likelihood	-25234.5		-25163.2		-24629.3	
Deviance	50469.0		50326.4		49258.6	
Deviance change	-		142.6***		1067.8***	

Model 3.0 refers to the unconditional means model (Singer and Willett, 2003). This model does not use any predictors and simply describes and divides the variation in my dependent variable, here reading frequency. My constant coefficient tells me that over the four sweeps of data, children on average read 6.3 days a week. I found that nearly two-thirds (64%) of the variation in reading scores is attributable to within-person variation. Model 3.0 shows evidence that reading varies across time. Therefore, in Model 3.1, the child's age has been added as a predictor to the model.

We see from the constant coefficient from Model 3.1 that the mean initial reading frequency for this model is 6.4; that is, children read books around 6 days a week at age two. From the age coefficient, we also see that there is a negative trajectory to this model of -0.036. This indicates that on average the number of days a child reads per week decreases by 0.036 per year. The covariance of Model 3.1 tells me that there is a negative correlation between the number of days a child read at age two and their rate of change in reading frequency; the more a child read at age two, the less their reading frequency will grow over time.

Between Model 3.0 and 3.1, there has been a reduction in the deviance by 142.5 and examination of the chi-square test indicates that the introduction of age into the model was beneficial.

Between Model 3.0 and Model 3.1, there has been an 11% reduction in within-person variation which indicates that 11% of the within-person variation we saw in Model 3.0 was associated with the rate of change. There is variation between children in terms of both their initial level of reading frequency at age two and also their rate of change in the number of days per week they read over time. This suggests it would be beneficial to include between-person predictors to look at both variation in initial state and change over time in reading. Model 3.2 will therefore introduce these predictors at both levels. This model looked at factors affecting the initial state of a child's reading frequency and also factors which might affect the rate of change in reading frequency across time. The full results of this model are shown below.

Table 48. Multilevel analysis of reading. Full model (Model 3.2). N = 3,778

Reading	**Coeff.**	**Std. Err.**	**z**	**P>z**
		Initial Status		
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	-0.053	0.049	-1.08	0.280
3. Small employers etc	-0.102	0.068	-1.50	0.133
4. Lower supervisory and technical occupations	-0.158	0.063	-2.53	0.012
5. Semi-routine and routine occupations	-0.163	0.057	-2.84	0.004
6. Never worked	-0.300	0.139	-2.16	0.030
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.136	0.043	-3.20	0.001
Higher Grade or equivalent	-0.057	0.079	-0.73	0.467
Standard Grade or equivalent	-0.451	0.062	-7.25	0.000

Number of parents who read	0.120	0.025	4.86	0.000
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	0.075	0.035	2.13	0.033
Use library often	0.263	0.049	5.33	0.000
Parental creative writing	0.053	0.051	1.03	0.303
Importance of cultural activities				
Not at all important	-0.197	0.088	-2.23	0.026
Not really important	-0.139	0.052	-2.68	0.007
Neither important nor unimportant	-0.077	0.051	-1.50	0.133
Quite important	-0.004	0.046	-0.08	0.933
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	-0.006	0.039	-0.15	0.877
Small, accessible towns	0.025	0.056	0.45	0.655
Small remote towns	0.257	0.089	2.88	0.004
Accessible rural	0.116	0.051	2.28	0.023
Remote rural	0.115	0.073	1.59	0.113
Female	0.070	0.080	0.88	0.381
First born	0.379	0.034	11.17	0.000
Sibling born	-0.048	0.038	-1.26	0.209
Household income (£1,000)	0.003	0.002	2.17	0.030
Number of books in the house				
0-10	-0.077	0.118	-0.65	0.513
11-20	-0.218	0.104	-2.09	0.036
21-30	0.017	0.110	0.15	0.878
30+ *(reference)*				
Access to cultural activities				
Very happy with the range of activities *(reference)*				
Quite happy with the range of activities	-0.042	0.044	-0.94	0.345

Would like child to have slightly more access	-0.062	0.048	-1.29	0.198
Would like child to have much more access	-0.146	0.059	-2.47	0.014
SIMD				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	-0.038	0.050	-0.76	0.446
13.5640 - 21.0436	-0.017	0.052	-0.33	0.739
21.0521 - 33.6982	-0.111	0.056	-1.98	0.048
33.7252 -89.0941 – most deprived	-0.147	0.058	-2.55	0.011
Use childcare	0.211	0.089	2.37	0.018
Age	-0.048	0.024	-2.00	0.045
	Rate of change			
Female	0.072	0.021	3.39	0.001
Number of books in the house				
0-10	-0.222	0.041	-5.43	0.000
11-20	-0.025	0.032	-0.78	0.434
21-30	-0.070	0.031	-2.25	0.024
30+ *(reference)*				
Childcare	-0.060	0.024	-2.51	0.012
Constant	6.324	0.125	50.52	0.000

Variance components	**Estimate**	**Std. Err.**
Level 2		
Rate of change	0.115	0.011
Initial status	1.849	0.152
Covariance	-0.384	0.039
Level 1		
Within person	1.383	0.024

Between Model 3.1 and 3.2, the deviance statistic was reduced by 1067.86 and the chi-square test confirmed that the introduction of background factors to explain between-person variation improved the model greatly.

Social class and parental education level were both significantly associated with a child's initial level of reading frequency. Children from higher social classes and those with parents with higher educational qualifications read more often at age two. Children whose parents' highest educational qualification was a Standard Grade or below read or were read to 0.45 days less a week at age two than children whose parents had a degree. All but one parental cultural capital variable were associated with the child's reading frequency at age two. The more parents read for pleasure, used the library and valued the importance of cultural activities, the more their child read at age two. Children whose parents use the library often read on 0.26 more days per week at age two than those whose parents don't use the library. Whether parents did creative writing had no significant association with a child's initial reading frequency.

The urban-rural classification of where the child lives, whether the child was a first born, household income, the number of children's books in the house, parents' happiness with their child's access to activities, the level of deprivation of the area the child lives and whether the child used childcare regularly were all significantly associated with a child's initial reading frequency level. Children who lived in more rural areas, were first borns, had higher household income, had a higher number of children's books in the house, had parents who were happy with their access to activities, lived in a less deprived area and used childcare regularly read more often at age two.

There was no significant difference between boys and girls in terms of their initial reading frequency level. Having a sibling born since the survey started also had no significant association.

I found that as children age, the amount they read every week decreases by a quarter of a day per year. The amount girls read increased as the child aged (an increase in 0.07 days per week being read to per year compared to boys). The more children's books in a child's house, the more their reading frequency increased as the child aged (Children with 0-10 books saw 0.22 days less of an increase per year in the amount of days they read per week compared to children with 30 or more books). Those children who used childcare regularly saw a decline in how often they read over time.

It is interesting that we saw regular childcare use associated with an initial benefit for a child's reading but then that also saw it was associated with a decline over time in how often a child read. Children who used childcare regularly read on 0.21 more days a week at age two. However, regular childcare usage was associated with less of an increase in reading over time (0.06 days per year). I decided to calculate what these two results meant in tandem. Below you can see how these two results affect change in reading frequency over time for someone who used childcare regularly.

Table 49. Effect that regular childcare usage has on a child's reading (0-7) over time.

Age	2	3	4	5
Benefit of regular childcare usage	+0.21	+0.15	+0.09	+0.03

The above table shows that the initial boost in reading frequency which childcare usage provides at age two is strong enough that my finding that childcare usage is associated with a decline in reading over time translates more into a narrowing of this initial benefit.

Changes in cultural capital's relationship with educational ability

I now move on to look at whether cultural capital's educational effects are the same across time. To do this I will again employ the multilevel model for change for both of my educational tests. This will help me to determine whether a child's cultural capital is one of the factors associated with differences in the rate of change in test scores over time.

Naming Vocabulary

To begin with I will look at Naming Vocabulary scores over time. Again, I will begin by running the unconditional means model (Model 4.0).

We can see from the constant coefficient of Model 4.0 that the average Naming Vocabulary score across both tests is about 56. I found that 59.5% of the total variation in Naming Vocabulary scores is attributable to within-person variation. There is evidence that Naming Vocabulary test scores are associated with a child's age and so I introduce age as a factor to Model 4.1 – the unconditional growth model.

Model 4.1 shows that the mean initial Naming Vocabulary test score at age three is 46. From the age coefficient, we see that on average, a child's test scores increase by 3.35 marks per year; therefore, between the age three and age five test, the child's scores increase on average by 6.7 marks. From the negative covariance value, we see that the higher a child scores on their Naming Vocabulary score at age three, the less their Naming Vocabulary score will grow over time.

Table 50. Multilevel analysis of Naming Vocabulary scores. Model 4.0 = unconditional means model; Model 4.1 = unconditional growth model; Model 4.2 = Full model excluding child's cultural omnivorousness and reading as predictors; Model 4.3 = Full model.

Naming Vocabulary	Model 4.0		Model 4.1		Model 4.2		Model 4.3	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
Constant	56.06	0.17	46.01	0.36	42.06	1.10	36.48	1.31
Age			3.35	0.10	3.78	0.20	3.62	0.20
Variance components								
Level 1								
Within-person	83.44	2.16	38.21	538.55	36.91	631.82	37.10	474.27
Level 2								
Initial status	56.74	2.73	246.05	2692.8	217.98	3159.1	216.73	2371.4
Rate of change			11.19	269.28	11.35	315.91	11.56	237.14
Covariance			-44.47	807.83	-42.73	947.72	-43.24	711.41
Log Likelihood	-25501.4		-24946.3		-24610.2		-24577.18	
Deviance	51002.8		49892.6		49220.4		49154.4	
Deviance change	-		1110.2***		672.2***		66.06***	

N=3,621

Between Model 4.0 and Model 4.1, there has been a 54% reduction in within-person variation which indicates that just over half of the within-person variation we saw in Model 4.0 was associated with the child's age. The deviance decreased by 1110.2 from Model 4.0 to Model 4.1 and inspection of the chi-square test suggested the addition of a child's age into the model was beneficial.

There is variation between children in terms of both their initial Naming Vocabulary score and also their rate of change in Naming Vocabulary score. This suggests it would be beneficial to include between-person predictors to look at both variation in initial state and change over time.

Table 51. Multilevel analysis of Naming Vocabulary score. Full model (Model 4.3).

Naming Vocabulary	Coeff.	Std. Err.	z	P>z
Initial Status				
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.185	0.455	0.41	0.685
3. Small employers etc	-1.369	0.623	-2.20	0.028
4. Lower supervisory and technical occupations	-1.788	0.582	-3.07	0.002
5. Semi-routine and routine occupations	-1.102	0.538	-2.05	0.040
6. Never worked	-1.107	1.325	-0.84	0.404
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-1.701	0.814	-2.09	0.037
Higher Grade or equivalent	-5.011	1.677	-2.99	0.003
Standard Grade or equivalent	-2.863	1.154	-2.48	0.013
Number of parents who read	0.395	0.233	1.70	0.090
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	0.540	0.338	1.60	0.110
Use library often	1.065	0.473	2.25	0.024
Parental creative writing	0.273	0.482	0.57	0.571
Importance of cultural activities				
Not at all important	-1.343	0.851	-1.58	0.114
Not really important	-1.513	0.495	-3.06	0.002
Neither important nor unimportant	-0.867	0.485	-1.79	0.074

Quite important	-0.606	0.436	-1.39	0.165
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	1.258	0.369	3.40	0.001
Small, accessible towns	1.939	0.514	3.77	0.000
Small remote towns	3.060	0.824	3.71	0.000
Accessible rural	1.898	0.472	4.02	0.000
Remote rural	3.832	0.665	5.76	0.000
Female	7.633	0.702	10.87	0.000
First born	2.797	0.333	8.40	0.000
Sibling born	-3.974	1.269	-3.13	0.002
Household income (£1,000)	0.050	0.015	3.43	0.001
Number of books in the house				
0-10	-0.973	0.431	-2.26	0.024
11-20	-0.246	0.356	-0.69	0.490
21-30	-0.498	0.344	-1.45	0.148
30+ *(reference)*				
Access to cultural activities				
Very happy with the range of activities *(reference)*				
Quite happy with the range of activities	0.288	0.417	0.69	0.489
Would like child to have slightly more access	-0.785	0.456	-1.72	0.085
Would like child to have much more access	-1.258	0.561	-2.24	0.025
SIMD				
0.9449 - 7.7446 - least deprived (*reference*)				
7.7472 - 13.5627	-0.183	0.466	-0.39	0.695
13.5640 - 21.0436	-0.131	0.484	-0.27	0.787
21.0521 - 33.6982	-1.198	0.527	-2.28	0.023
33.7252 -89.0941 – most deprived	-1.029	0.545	-1.89	0.059

Use childcare	0.015	0.280	0.05	0.957
Cultural Omnivorousness	0.593	0.137	4.32	0.000
Reading	0.359	0.054	6.68	0.000
Age	3.624	0.204	17.76	0.000
Rate of change				
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	0.220	0.218	1.01	0.313
Higher Grade or equivalent	1.094	0.462	2.37	0.018
Standard Grade or equivalent	0.312	0.304	1.02	0.306
Female	-1.604	0.195	-8.22	0.000
Sibling Born	0.749	0.333	2.25	0.025
Constant	36.477	1.307	27.92	0.000

Variance components	**Estimate**	**Std. Err.**
Level 2		
Rate of change	11.556	237.14
Initial status	216.727	2371.37
Covariance	-43.243	711.41
Level 1		
Within person	37.104	474.27

N=3,621

Both cultural omnivorousness and a child's reading were significantly associated with a child's initial Naming Vocabulary score. Children who read more frequently and who participated in a wider variety of cultural activities scored higher on the test at age three. However, I looked at whether either had any relationship with the rate of change of Naming Vocabulary scores over time but found no significant evidence of this.

Social class and parental education level were both significantly associated with a child's initial Naming Vocabulary score. Those children from higher social classes with parents with higher

educational qualifications scored significantly higher on the Naming Vocabulary test at age three.

Parental cultural capital had a mixed relationship with a child's initial Naming Vocabulary score. Parental library usage and cultural importance both had significant associations while parental reading and parental creative writing were both non-significant. Children whose parents used the library more and thought cultural activities were more important had significantly higher Naming Vocabulary scores at age three.

Urban-rural classification, the gender of the child, whether the child was a first born, whether a sibling was born since the survey started, the number of children's books in the house, household income, parents' happiness with access to activities and the level of deprivation of the area the child lives were all significantly associated with higher Naming Vocabulary scores at age three. Children who lived in more rural locations, were female, were first borns, didn't have a sibling born since the survey started, had more children's books in the house, had higher household income, had parents who were happy with their access to activities and who lived in less deprived areas had significantly higher initial Naming Vocabulary scores.

Whether the child used childcare regularly was not significantly associated with the child's Naming Vocabulary score at age three.

Girls saw less of an increase in Naming Vocabulary score over time. Having a sibling born since the survey started was associated with less of an increase in Naming Vocabulary score between age three and age five. Children with more children's books in their house saw their Naming Vocabulary score increase more over time.

The addition of these predictors for the children's initial Naming Vocabulary scores and the change in that score reduced the deviance by 738 and the chi-square test results demonstrated the benefit of utilising these predictors. I ran the same model excluding my variables for the child's cultural capital (Model 4.2). There was a decrease in the deviance of 66 when I introduced cultural capital into the model and this was shown to indicate that this improved the model.

Picture Similarities

I now move on to look at the same set of questions for my Picture Similarities test scores.

We can see from Model 5.0 that the average Picture Similarities score across both tests is 54.33. The model shows me that 87.1% of the variation in Picture Similarities scores is associated with within-person variation.

Table 52. Multilevel analysis of Picture Similarities scores. Model 5.0 = unconditional means model; Model 5.1 = unconditional growth model; Model 5.2 = Full model excluding child's cultural omnivorousness and reading as predictors; Model 5.3 = Full model.

Picture Similarities	Model 5.0		Model 5.1		Model 5.2		Model 5.3	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
Constant	54.33	0.14	41.71	0.33	41.67	1.17	33.47	2.25
Age			4.24	0.10	3.89	0.28	5.06	0.67
Variance components								
Level 1								
Within-person	111.62	2.67	44.71	650.75	43.13	932.85	42.96	882.90
Level 2								
Initial status	16.49	2.24	186.31	3253.7	172.77	4664.2	172.13	4414.5
Rate of change			15.47	325.37	15.81	466.42	15.87	441.45
Covariance			-45.94	976.12	-45.46	1399.3	-45.57	1324.3
Log Likelihood	-25448.5		-24816.8		-24628.1		-24605.8	
Deviance	50897.0		49633.6		49256.2		49211.6	
Deviance change	-		1263.4***		377.3***		44.6***	

N=3,621

The constant coefficient from Model 5.1 shows that the mean initial Picture Similarities score at age three was 41.71 while the age coefficient tells me that scores increased on average by 4.24 marks per year; 8.5 marks between age three and age five. Between Model 5.0 and Model 5.1, there has been a 60% reduction in within-person variation, indicating that 60% of the within-person variation we saw in Model 5.0 was associated with the rate of change. The negative covariance value tells me that the higher a child scores on their Picture Similarities score at age three, the less their Picture Similarities score will grow over time. The decrease in deviance decreased from Model 5.0 to Model 5.1 suggested that the addition of the child's age to the model was beneficial.

There is variation between children in terms of both their initial Picture Similarities score and their rate of change in that score, suggesting it would be beneficial to include between-person predictors to look at both variation in Picture Similarities' initial score and the change over time in that score in Model 5.3.

Table 53. Multilevel analysis of Picture Similarities scores. Full model (Model 5.3).

Picture Similarities	**Coeff.**	**Std. Err.**	**z**	**P>z**
		Initial Status		
Social Class of family				
1. Managerial and professional occupations *(reference)*				
2. Intermediate occupations	0.163	0.430	0.38	0.705
3. Small employers etc	-0.459	0.592	-0.78	0.437
4. Lower supervisory and technical occupations	-1.697	0.551	-3.08	0.002
5. Semi-routine and routine occupations	-0.435	0.508	-0.86	0.391
6. Never worked	-2.298	1.226	-1.87	0.061
Parental Education Level				
Degree or equivalent *(reference)*				
Vocational qualification or below degree	-0.188	0.366	-0.51	0.608
Higher Grade or equivalent	0.515	0.679	0.76	0.448
Standard Grade or equivalent	-0.642	0.545	-1.18	0.239
Number of parents who read	0.335	0.212	1.58	0.114
Parental library usage				
Don't use library *(reference)*				
Use library sometimes	-0.196	0.308	-0.64	0.525
Use library often	-0.045	0.432	-0.10	0.918
Number of parents who write stories	-0.277	0.438	-0.63	0.527
Importance of cultural activities				
Not at all important	-0.920	0.777	-1.18	0.237
Not really important	-0.455	0.451	-1.01	0.313

Neither important nor unimportant	-0.371	0.442	-0.84	0.401
Quite important	-0.244	0.396	-0.62	0.538
Very important *(reference)*				
Rural-urban classification				
Large urban (*reference*)				
Other urban	-0.003	0.876	-0.00	0.997
Small, accessible towns	1.764	1.249	1.41	0.158
Small remote towns	8.568	1.994	4.30	0.000
Accessible rural	2.335	1.135	2.06	0.040
Remote rural	3.614	1.656	2.18	0.029
Female	3.386	0.693	4.89	0.000
First born	0.715	0.311	2.30	0.022
Sibling born	0.133	0.348	0.38	0.701
Household income (£1,000)	0.055	0.014	3.88	0.000
Number of books in the house				
0-10	-0.866	0.423	-2.05	0.041
11-20	-0.663	0.364	-1.82	0.069
21-30	-0.212	0.361	-0.59	0.557
30+ *(reference)*				
Access to cultural activities				
Very happy with range of activities *(ref)*				
Quite happy with the range of activities	-0.246	0.379	-0.65	0.516
Would like child to have slightly more access	0.028	0.414	0.07	0.946
Would like child to have much more access	0.433	0.511	0.85	0.397
SIMD				
0.9449 - 7.7446 - least deprived (*ref*)				
7.7472 - 13.5627	-1.921	1.058	-1.82	0.069
13.5640 - 21.0436	-2.516	1.080	-2.33	0.020
21.0521 - 33.6982	-4.201	1.148	-3.66	0.000
33.7252 -89.0941 – most deprived	-4.261	1.140	-3.74	0.000
Use childcare	-0.077	0.283	-0.27	0.785

Cultural Omnivorousness	0.455	0.140	3.24	0.001
Reading	0.580	0.150	3.87	0.000
Age	5.063	0.666	7.60	0.000
Rate of change				
Rural-urban classification				
Large urban (*reference*)				
Other urban	0.231	0.273	0.85	0.397
Small, accessible towns	-0.031	0.394	-0.08	0.938
Small remote towns	-2.714	0.633	-4.29	0.000
Accessible rural	-0.454	0.365	-1.24	0.213
Remote rural	-0.688	0.508	-1.36	0.175
SIMD	0.200	0.062	3.25	0.001
0.9449 - 7.7446 - least deprived (*ref*)				
7.7472 - 13.5627	0.408	0.330	1.24	0.217
13.5640 - 21.0436	0.671	0.337	1.99	0.046
21.0521 - 33.6982	0.906	0.355	2.55	0.011
33.7252 -89.0941 – most deprived	0.633	0.350	1.81	0.070
Female	-0.621	0.218	-2.85	0.004
Reading	-0.099	0.047	-2.11	0.034
Constant	33.474	2.251	14.87	0.000

Variance components	**Estimate**	**Std. Err.**
Level 2		
Rate of change	15.871	441.447
Initial status	172.131	4414.466
Covariance	-45.566	1324.339
Level 1		
Within person	42.958	882.899

N=3,621

I found that the more children read and the more they participated in a wide range of cultural activities, the better their Picture Similarities score at age three. I also looked at whether either of my cultural capital variables were associated with changes in Picture Similarities score over time. I found that cultural omnivorousness had no significant association with this change over time. However, I found that the more children read, the less of an increase in Picture Similarities score they experienced between age three and age five. When we explore this we see that this relates to a narrowing of the gap of the benefits of reading on a child's Picture Similarities score from age three to age five. The table below details this relationship if a child read a day more than another child. We see that at age three, this results in the child who reads a day more scoring on average 0.58 points higher on their Picture Similarities test while at age five, this has fallen to 0.38 points.

Table 54. Effect that one extra day reading per week has on a child's Naming Vocabulary score over time.

Age	3	4	5
Benefit of one extra day reading on Picture Similarities	+0.58	+0.48	+0.38

Social class was significantly associated with a child's initial Picture Similarities test score. Those children from higher social classes scored higher on the test at age three. However, neither parental education level nor parental cultural capital had a significant association with a child's initial Picture Similarities score.

Urban-rural classification, gender, whether the child was a first born, household income, number of children's books in the household and the level of deprivation of the area the child lives were all significantly associated with a child's initial Picture Similarities score. Children who lived in more rural locations, were female, were first borns, had a higher household income, had more children's books in the house and lived in less deprived locations scored significantly higher on the test at age three.

Having a sibling born since the survey started, parents' happiness with access to activities and childcare usage all had no significant association with a child's initial Picture Similarities score.

Girls experienced less of an increase in Picture Similarities score between age three and age five. Children living in small remote towns had a lower rate of change in Picture Similarities score between age three and age five than children from large urban areas. Children living in more deprived areas tended to see more of an increase in Picture Similarities score over time.

The addition of these between-children predictors for the initial scores and the change in those scores over time for Picture Similarities reduced the deviance score significantly, demonstrating the benefit of utilising these predictors. I ran the same model excluding my variables for the child's cultural capital (Model 5.2). There was a decrease in the deviance of 44.6 when I introduced cultural capital into the model and the chi-square test indicated that this improved the model.

Discussion

I found mixed results on whether a child's cultural capital's educational effects were consistent over time. For the most part a child's cultural capital had a relatively stable educational effect across time. For the Naming Vocabulary test, I found that both cultural omnivorousness and reading frequency were both positively associated with a child's initial test score at age three but had no significant association with changes over time in that score, indicating that cultural capital's educational effect on this particular test did not seem to widen or narrow over time. This suggests that for Naming Vocabulary, cultural capital's educational effects are in place early on and are consistent over time.

However, for the Picture Similarities test, I saw a slightly different picture; cultural omnivorousness and reading were both associated with the child's initial test score but reading was also significantly associated with the rate of change in that test score over time. Children who read more scored higher on the Picture Similarities test at age three but they also saw less of an increase in that test score from age three to age five. This indicates that a child's reading is more beneficial for their Picture Similarities score at age three than age five. We might also view it as showing children with lower cultural capital catching up on this educational test over time. Cultural omnivorousness' educational effects on Picture Similarities test scores did not narrow or widen over time. It would of course be beneficial to explore this relationship further as the child ages. Do cultural capital's educational effects continue to be relatively stable or do they narrow, widen or fluctuate?

I found evidence that parental cultural capital was associated with changes in a child's cultural capital over time. These changes were negative; parental library usage and the importance

placed on cultural activities by parents were both associated with less of an increase in cultural omnivorousness and voraciousness between age two and age four. This suggests that children who do not have parents high in cultural capital experience a small amount of catching up between age two and age four in terms of cultural capital. For reading, I found that while all but one parental cultural capital variable was associated with reading more frequently at age two, parental cultural capital was not associated with changes in how often the child read over time. This illustrates that parental cultural capital's effects on a child's reading are relatively consistent over time.

Through looking at graphs (e.g. Figure 24 and Figure 25) I was able to show that while these two elements of parental cultural capital were associated with less of an increase in cultural omnivorousness and voraciousness, children with parents high in these parental cultural capital measures still tended to see an increase in their own cultural omnivorousness and cultural voraciousness between age two and age four. They also still had noticeably higher levels of cultural omnivorousness and cultural voraciousness at age four than children with lower levels of parental cultural capital.

It is important to note that many of my parental cultural capital variables are from the same sweep of data, when the child is aged two. This is clearly somewhat of an issue as they may be more directly related to the child's age two cultural capital variables which is why we might have seen them as associated more with the child's cultural omnivorousness and cultural voraciousness at age two than age four. I do not know if these parental cultural capital variables would be constant over time. My evidence from the age six parental library usage variable tends to suggest that parental cultural capital might not be a static concept with over half (51%) of parents experiencing a change in their response category.

I found some evidence using this parental library usage variable that changes in parental cultural capital were associated with changes in a child's cultural capital. Having parents who increased their library usage was associated with increases in the child's cultural omnivorousness and voraciousness. For reasons discussed, I am tentative to draw too many conclusions based on these age six parental library usage results but they do seem to suggest that parental cultural capital's effects on a child's cultural capital need to be maintained; the transmission of cultural capital seems to be a continuous process throughout early childhood. Efforts to increase parents' cultural capital look like they may have benefits for a child's cultural capital. These findings make it difficult to conclude whether parental cultural capital's

effects do indeed narrow over childhood or not. Further studies would be wise to try and incorporate parental cultural capital measures with more than one time point.

It would of course be hugely beneficial to have more time points with data on the formal cultural activities component of a child's cultural capital. It would be fascinating to know if these changes we have seen in these analyses are trends that continue over time or if they fluctuate. Do the parental cultural capital effects on a child's cultural capital continue to narrow or do they fluctuate?

I found strong evidence that the more children's books in the household a child has, the more their cultural capital will grow over time. The greater the number of children's books in the household, the more a child's cultural voraciousness, cultural omnivorousness and reading levels increased over time. We might view this as evidence of inequalities around cultural capital accumulation increasing over time. This result is especially interesting in tandem with my result showing parental cultural capital's effects decreasing over time, suggesting that the dynamics around cultural capital accumulation vary across time.

We saw that for both cultural omnivorousness and voraciousness, those children with few children's books in the household tended to lag behind further by age five compared to children with more books. For reading I found that the number of children's books in the household had a positive association with both the initial frequency a child read as well as the growth of this reading frequency over time. Not only does this suggest that children with less books in the household are disadvantaged in how often they initially read at age two but it also suggests that these reading inequalities associated with the number of children's books in the household widen as the child gets older. This result demonstrates the importance of children's books and highlights that any policies aimed at increasing the amount children read by providing them with books would be wise to continue with these policies throughout early childhood. A one-time early intervention might equalise reading inequalities at age two but these might simply re-emerge once those books were no longer age-appropriate.

I found slightly contrasting results around the role childcare played in a child's reading over time. I found that children who regularly use childcare read more at age two. However, I also found that regular childcare usage was associated with decreases in reading frequency over time. When I looked at these two differing results together, I saw that childcare usage provides children with an initial reading boost at age two but that by the time the child is aged 5, this has almost entirely vanished. This suggests that if we were to promote childcare usage as a

means to reduce reading inequalities, this would be most efficiently targeted at children around the age of two; however, more would need to be done to maintain the reading benefits that childcare usage can seemingly bring as the child ages. One important thing to consider around this result is that our measure for reading is reported by the parents and so may not include any reading done while the child is at a childcare setting. It may well be that children who are regularly using childcare are reading more in this setting and this is not being captured when we see a decline in their reading over time.

The child's gender had interesting effects on a child's cultural capital over time. For cultural omnivorousness and voraciousness, boys and girls showed no significant difference in their change over time. However, for reading I found that initially there is no gender difference in how often children read but that the amount girls read increased over time compared to boys. Whatever causes this difference in reading frequency between boys and girls doesn't seem to come into effect until the child is aged three, at which point its effects then only grow over time. This again provides evidence that gender plays a clearly different role in the accumulation of my two components of cultural capital.

It is very interesting that having a sibling born since the survey started had no significant association with changes over time in any of my cultural capital variables. I had expected the reduction in both time and money which an extra sibling might bring to have a negative effect on a child's cultural capital across time, yet I found no evidence for this. However, we did see that first-born children witnessed more of an increase in their cultural voraciousness over time.

I found that household income was associated with increases in a child's cultural omnivorousness over time; the greater the household income, the more the child's cultural omnivorousness grew between age two and age four. There therefore seems to be a difference in the role household income plays at age two and age four, with household income's positive effects on a child's cultural omnivorousness only being felt at age four. It may well be that certain cultural activities cost more at age four than at age two. Without more data it is also hard to tell if this increased effect of income over time on cultural omnivorousness is something that will continue to grow or if it is something specific about cultural omnivorousness at age four. For cultural voraciousness and reading, I found that household income's positive effects tended to be consistent over time. The greater the household income, the higher the child's initial reading frequency at age two and there was no evidence these benefits narrowed or widened as the child grew older.

7. Conclusion

Our two key results from this analysis are that cultural capital in early childhood is unequally distributed and is educationally beneficial. Children from more disadvantaged backgrounds are shown throughout my models to have lower cultural capital levels than those from more advantaged backgrounds while in almost all of my models, children higher in cultural capital score higher on educational ability scores.

My results on the unequal nature of cultural capital in early childhood confirm what I had expected to find. However, it is still a notable finding in a number of ways. No studies have used Growing Up in Scotland to specifically look at cultural capital before. Any replication of an important finding using a new piece of data is worthwhile, regardless of how often this finding has been shown before. It is also well worth pointing out the rarity of statistical analyses exploring cultural capital in early childhood (Dumais, 2006). Given this fact, my finding that cultural capital is unequally distributed in early childhood is actually a very important finding. It replicates the typical finding that cultural capital is an unequal resource but shows this for an age group that has tended to be ignored in this area of study.

This result also suggests that the barriers to cultural capital accumulation are well in place at a very early age. This fits in line with what much of the literature on cultural capital had suggested (Bourdieu, 1986; De Jager, 1967; Dumais, 2006) which is that cultural capital's uneven distribution is in place by the time the child reaches school. My research not only supports this view but goes further, providing strong evidence that cultural capital is unequally distributed by the time a child is aged as young as two. This strongly supports the idea that the accumulation of cultural capital "starts at the outset, without delay" (Bourdieu, 1986, p. 246). This result suggests that any attempt to equalise access to cultural capital needs to start at a very early age.

Throughout this thesis, evidence was found to show that a child's cultural capital is significantly associated with a child's educational ability. This finding is very important, supporting the idea that cultural capital is a worthwhile educational resource in early childhood. While there has been evidence of cultural capital's educational benefits before (e.g. Sullivan, 2001; DiMaggio, 1982; Katsillis and Rubinson, 1990), there is very little evidence of this educational effect existing at such an early stage of a child's life. This thesis found evidence

that cultural capital had educational benefits for children as young as three, indicating that not only does the accumulation of cultural capital start at a very early stage but so too do the educational benefits attached to it. I also showed that cultural capital's educational effects do not narrow or widen over time; cultural capital's effects seem stable throughout childhood.

The fact that I found that cultural capital is both unequally distributed and educationally beneficial has great consequences. This suggests that cultural capital might be thought of as a potential cause of educational inequalities in early childhood. We know that educational inequalities in early childhood can have a huge impact on a child's life with the effects often still being felt at a much later age (Carneiro and Heckman, 2003; Feinstein, 2003; Schoon & Parsons, 2002). This suggests that educational inequalities arising from cultural capital in early childhood might have long-lasting consequences. Highlighting cultural capital as one of the causes of these inequalities is therefore a key finding from this thesis. However, it is worth pointing out that throughout my educational models, social class remained significantly associated with children's educational ability, even after controlling for the child's cultural capital. While cultural capital seems as though it is associated with educational inequalities in early childhood, so too do several other key measures of social disadvantage.

Before focusing on how we might redistribute cultural capital more evenly, it is crucial we know whether cultural capital's educational benefits can be felt by all. This refers to the debate around the cultural mobility model vs. the cultural reproduction model. There are three competing theses for how social class interacts with cultural capital: the cultural reproduction model, where cultural capital is more beneficial for higher-class individuals; DiMaggio's (1982) cultural mobility model, where cultural capital is more educationally beneficial for lower-class individuals; and Aschaffenberg and Maas' (1997) cultural mobility model, where cultural capital has the same educational benefit for everyone, regardless of class. The evidence presented in this thesis strongly suggests that in early childhood, Aschaffenberg and Maas' (1997) cultural mobility model exists. That is, cultural capital's educational benefits will be equally available to all who are in possession of it, regardless of social class.

This result is very important in terms of the implications of my finding that cultural capital is both unequally distributed and educationally beneficial. It suggests that the ability to use cultural capital isn't inherently unequal, rather the access to it is. This result means that it would be a worthwhile strategy promoting access to cultural capital for disadvantaged children as a way of tackling educational inequalities in early childhood. If we had two children from

differing social classes, then this result suggests that if they had the same levels of cultural capital then they would both feel its effects relatively equally. However, as mentioned earlier, this is not to say that cultural capital would negate the educational effects of social class.

Identifying the causes of educational inequalities is crucial for trying to redress those inequalities. My findings on which factors are associated with early childhood cultural capital could therefore be very useful for determining how we might tackle the unequal distribution of cultural capital. I will now present those factors which were significantly associated with a child's cultural capital:

Parental cultural capital

I found throughout this thesis that parental cultural capital was significantly associated with a child's cultural capital. The greater the parents' cultural capital levels, the greater the child's. This result backs up the literature (Nagel, 2010; Bourdieu, 1986, Becker, 2014) which had stressed the importance of parental cultural capital in the early accumulation of cultural capital.

This result suggests that parents transmit their own cultural capital to their children and that the results of this are in place at a very young age. This inheritance aspect is clearly an issue if we wish to try and tackle educational inequalities in this period. Given I have shown cultural capital is educationally beneficial in this period, the fact that a parent's own cultural capital is so important for their child's cultural capital levels presents a real problem in any attempt to increase social mobility in early childhood. In this way, we see evidence to support Bourdieu's idea that cultural capital helps to reproduce inequalities between generations. The benefits the parents have felt from their own cultural capital are being passed on to their children.

Parental cultural capital's educational effects were also shown to be strongly mediated by the child's cultural capital in my first two analysis chapters. This result is very interesting, suggesting that unless a parent's cultural capital is translated into their child's cultural capital, then the parent's cultural capital has no educational benefit. This means that parents high in cultural capital still have to put in the effort to take their child to the museum, for instance, if they wish for their child to experience the educational benefits that their own parental cultural capital brings. I believe this supports Bourdieu's (1986, p. 253) assertion that key to the accumulation of cultural capital is "the amount of time devoted to acquiring it". My results also seemed to suggest that it was the activities element of parental cultural capital over the internalised component that was most important.

This thesis also found evidence that parental cultural capital's effects on a child's cultural capital changed somewhat over time. I found that children whose parents used the library less and who thought cultural activities were less important experienced something of a catch up between age two and age four in their cultural omnivorousness and cultural voraciousness levels compared to children with parents high in both of these parental cultural capital measures. Inequalities in cultural capital levels associated with these parental cultural capital measures narrowed over time. However, I am hesitant to conclude that parental cultural capital's effects decrease over time until I have measures for parental cultural capital with multiple time points. Exploratory analysis using a measure for parental library usage measured at age six revealed that parental cultural capital's effects may not in fact narrow over time.

While I have found good evidence to understand the role of parental cultural capital in early childhood, I believe there are a number of ways that further studies might improve on my results. While I was generally happy with my parental cultural capital measures, it would have been beneficial to have a wider variety of activities included, such as museum attendance for example. Being able to include a latent construct for parental cultural capital in my structural equation modelling analysis would have also greatly improved my understanding of the role of parental cultural capital in this period.

As mentioned, one aspect of parental cultural capital which it would be of great interest to study further in the future is the longitudinal nature of its relationship with a child's cultural capital. While there were multiple time points for the child's cultural capital measures, the parental cultural capital measures used in this thesis were all unfortunately one-time measures. This restricted me from looking at whether parental cultural capital's effects changed over time. It also restricted me from looking at whether changes in parental cultural capital would result in changes in the child's cultural capital which would have provided more evidence on how active a process cultural capital transmission is. I did provide some preliminary findings on these issues through my investigation of the role of an age six measure for parental library usage in my third analysis chapter. These results seemed to show that parental cultural capital's effects on a child's cultural capital were not set in stone and that increases and decreases in parental cultural capital over time could result in changes to the child's cultural capital. However, it is worth pointing out that my measure for parental library usage here was measured after the child's cultural capital measures and so these findings should be treated very carefully.

Children's books in the household

Throughout this thesis, the number of children's books in the household was shown to be strongly associated with a child's cultural capital. The greater the number of books in the household, the higher the levels of the child's cultural capital. This result stresses the benefits of providing children with books at an early age as a means of increasing their cultural capital. In the final analysis chapter, I also showed that not only was a greater number of children's books associated with reading more at age two but reading inequalities associated with the number of books increased as the child aged.

I found that the number of children's books in the household had a very interesting relationship with the child's educational ability. In both my first and second analysis chapters, I found that before accounting for the educational benefits of the child's cultural capital, children tended to score higher on the educational tests if they had more children's books in their household. Once I controlled for the child's cultural capital, however, this educational benefit from the books disappeared. I concluded that a child's cultural capital in early childhood fully mediates the educational effects of the number of children's books in the household. This means that whichever channels the educational benefits of cultural capital arises from, it covers the educational benefits that come from the number of books in the household.

I believe that this result suggests that the educational benefit of having a large number of children's books in the household does not arise from simply having the books but arises from actually using the books and transmitting them into cultural capital. A child who has a large number of books in the household will gain no educational benefit from them unless they are utilised; for example, by reading. Having a well-stacked bookshelf will mean nothing if the books remain unread. I believe this result is very interesting when thinking about how Bourdieu classified different elements of cultural capital. The number of books in a household has commonly been viewed as a type of 'objectified' cultural capital (Bourdieu, 1986; Georg, 2004). My results suggest that this type of cultural capital might only be educationally beneficial in early childhood if it can be 'activated' and translated into actual participation in cultural activities. In this sense, my results provide strong support for Lareau's (1987, p. 4) assertion that cultural resources "must be invested or activated to become a form of cultural capital".

As a means of equalising cultural capital in early childhood, schemes such as Bookbug Bags from the Scottish Book Trust, which gives out free book bags for every child in Scotland from

birth to Primary 1, are strongly backed up by the evidence from this thesis. However, simply providing young children with books in and of itself will not be enough to help tackle educational inequalities in this period. Rather these schemes need to also make sure, or be backed up by other schemes which make sure, that children are being provided with the capacity to utilise these books fully. A two-pronged intervention would work best according to these findings; providing children with access to a larger amount of books and then also making sure that all children and parents are in a position to best make use of these books.

One interesting thing you can see from my first analytical chapter is that the actual number of children's books seems important. For instance, for cultural omnivorousness and voraciousness, what is important at age two and age four is that children have over thirty books in their household. For reading, I found that between age two and age three, having more than ten books is important for the child reading more while between ages four and five this number increases to more than thirty. It seems in general then that a large number of books are required in order to provide children with increased cultural capital, especially at age four and above. We might therefore suggest that any policies aimed at increasing children's cultural capital through books might be economically better promoting and widening access to libraries and library vans, etc.

Childcare

Our results around the use of childcare and the accumulation of cultural capital in early childhood provide us with some very interesting results. In my first analysis chapter, the regular use of childcare was associated with higher levels of cultural omnivorousness at age four and reading more often between age four and age five. I therefore have some evidence that childcare provides a separate pathway to cultural capital than the host of background factors which I controlled for. My results seem to suggest that childcare usage does not have any impact on a child's cultural capital at age two. While we cannot be clear what causes this difference between age two and age four, we might speculate that there are greater challenges with children being taken on cultural trips by childcare staff at age two than age four.

I also found that there was a significant interaction effect between childcare usage and parental reading in their association with a child's cultural omnivorousness. Childcare usage was associated with a greater increase in cultural omnivorousness at age four for those children with no parents who read for pleasure. This could be seen as evidence of childcare helping to make up for a child's lack of parental cultural capital which is a very exciting result, indicating

that childcare might be useful to use as an intervention tool to equalise cultural capital, especially among children low in parental cultural capital. The fact that children low in parental cultural capital experienced more of a benefit to their cultural omnivorousness from childcare usage supports the findings of Sylva et al. (2011) who found that high-quality childcare helped to negate the disadvantages of a poor home learning environment.

I saw some evidence of why childcare usage might be beneficial for a child's cultural omnivorousness through preliminary descriptive analysis on children being taken to cultural activities by childcare staff. I found that among children who were last taken to a cultural activity by a member of childcare staff at age four, they were much less likely to have been to that activity at age two than other children. This highlights a potential way that childcare can help children low in cultural capital "catch up".

Further analysis would do well to include a more sophisticated measure of childcare. For instance, several studies (Sylva et al, 2010; Melhuish et al, 2008) have stressed the usefulness of a measure of childcare quality instead of childcare usage. A previous study has linked childcare quality data to Growing Up in Scotland (Bradshaw et al., 2014) and I believe it would be very worthwhile to utilise this linked data to explore the role childcare quality has in the accumulation of cultural capital.

Gender

Throughout the analyses there was no difference between boys' and girls' cultural omnivorousness or voraciousness levels at age two or age four. However, for reading there were noticeable differences between boys and girls in all of my analyses, with girls reading or being read to more frequently. my multilevel analysis of reading showed that the amount girls read grew over time compared to boys. Interestingly, when I used a latent construct for the formal cultural activities component in analysis chapter 2, there was a slight gender difference with boys having higher levels of this components than girls. However, this effect was only very small.

While previous research on gender differences has tended to find that females have higher cultural capital levels than males (DiMaggio, 1982; Katz-Gerro, 2002; Bihagen and Katz-Gerro, 2002; Mohr and DiMaggio, 1995; Dumais, 2002), my findings were somewhat mixed. My research suggests there is a difference in boys' and girls' cultural capital in early childhood with girls having higher cultural capital levels but this is almost entirely down to gender differences in reading with only one small difference found for the more formal cultural

activities. If one was to try and equalise cultural capital levels among boys and girls in early childhood then my research would strongly suggest focusing this entirely on reading practices. It would also suggest targeting this intervention early as I have provided evidence that gender inequalities within reading grow over time.

The effects of siblings

Interestingly, the effects of being a first born or having a sibling born had differing relationships with a child's cultural omnivorousness, cultural voraciousness and reading. My first analysis chapter showed that first-born children had higher levels of cultural voraciousness at age two and age four while having a sibling born had a negative association with a child's cultural voraciousness at age four. My second analysis chapter found that having a sibling born was associated with lower levels of the formal cultural activities component. My chapter on changes in cultural capital found that being a first born was associated with more of an increase in cultural voraciousness between age two and age four. I also saw throughout my analyses that first-born children read significantly more than other children. However, neither being a first born nor having siblings born had any significant association with a child's cultural omnivorousness in any of me analyses. It seems therefore that being a first born and having a sibling born seems to affect the frequency with which children participate in cultural activities but not the variety of activities.

One way to interpret this result would be to focus on resources. Ermisch and Francesconi (2001) argued that children from larger families suffer due to a "scarcity of resources (both money and time)" (p. 151) which the addition of extra siblings bring. Cultural voraciousness and me measure for reading are both characterised by the frequency of participation which can require both money and time which is not necessarily the case for cultural omnivorousness. Therefore, the frequency of activities which a child participates in, which requires time and economic investment, is negatively affected but the variety of activities, which doesn't necessarily require as much time or economic resources, is not affected. This argument around resources was backed up somewhat by my finding in the first analysis chapter that the positive effects of being a first-born child on cultural voraciousness at age two were greater for those with lower household income. This suggests that if economic resources are scarce, children with more siblings' cultural voraciousness will be more negatively affected.

If we were to try to equalise cultural capital levels, these results suggest that we might need to focus on ways to reduce the time pressures and economic expenses associated with participating in certain cultural activities, especially for parents with multiple children.

Physical access to cultural activities

One thing this thesis was interested in understanding was how access to cultural activities affected a child's cultural capital. The resounding conclusion from this thesis is that physical access to cultural activities is crucial for determining whether children participate in those cultural activities. For the formal cultural activities component of cultural capital, the urban-rural classification of where the child lives was a significant predictor in every single model. Children living in large, urban areas participate more frequently and in a wider range of cultural activities than children from more rural locations. This finding confirms my original hypothesis that children would have higher cultural omnivorousness and cultural voraciousness levels if they lived in large urban areas. I had expected to find this mainly due to the tendency for large cultural institutions to be located in more urban environments.

In contrast to me cultural omnivorousness and voraciousness results, the urban-rural classification of where a child lives had no effect on how often the child reads. This is very interesting and sheds light on the different nature of reading compared to more formal cultural activities. Reading does not suffer from the problem of physical access like a lot of the more formal cultural activities. A child can read or be read to at home, regardless of the urban-rural classification of the home whereas proximity to a museum might significantly hinder a child visiting it frequently.

This finding is very interesting as it provides support for the idea that the location a child lives in is important for their cultural capital. It suggests that schemes to equalise access to cultural activities would do well to try and promote participation in less urban areas. Rural touring schemes which aim to bring cultural performances and exhibitions to more rural areas are strongly supported in their purpose by this thesis. There are thirty of these schemes in England, Scotland and Wales according to the National Rural Touring Forum. Five of these are based in Scotland.

Reading vs. formal cultural activities

In terms of whether there should be a divide between reading and the more formal cultural activities in terms of the educationally beneficial part of cultural capital, the evidence provided

here gave one consistent answer – both reading and formal cultural activities are educationally beneficial. This result is at odds with certain scholars such as Crook (1997) and De Graaf et al. (2000) who believed that only the reading element of cultural capital was educationally beneficial. The evidence here firmly supports the opposing view and will add substantially to this debate.

The fact that this result comes in the context of early childhood makes it all the more significant. While there have been several studies which have looked at the educational divide between reading and more formal cultural activities, none, to my knowledge, have looked at this divide in early childhood. My results therefore add a great deal of new evidence to this debate. Because my study focuses on an age group previously ignored in this debate, it is unclear whether my results are specific to this age group or whether the same result would be seen as these children got older. As the children in Growing Up in Scotland get older it would be extremely interesting to look into this question again. If it were found again that both reading and cultural activities are educationally beneficial at an older age, then this would further support the evidence that an educational divide between reading and cultural activities is not a useful one. However, if it was found at a later age that reading was now the only educationally beneficial part of cultural capital then this would also be a very interesting result, suggesting that the reading vs. formal cultural activities divide is something that might be age-specific, with the divide occurring later in a child's life.

The context of early childhood is also important for this result because of the huge amount of evidence of the educational benefits of reading in early childhood (Wood et al, 2015; Wade and Moore, 2000; Reading Agency, 2015). If we already know that there are large, well-documented educational benefits to reading in early childhood, then this result is even more noteworthy. Despite these huge reading-related benefits, the more formal cultural activities still have an independent positive educational benefit.

In terms of policy decisions, this result has big implications. If we wish to provide young children with access to cultural capital for its educational benefits, then this result suggests that we wouldn't want to solely focus on promoting reading as previous research might have suggested. Rather, this result suggests that promoting both reading and cultural activities in early childhood would have even greater educational benefits. The evidence here suggests that targeting both of these types of activities would promote educational development in unique ways.

However, while my results did not suggest any divide between reading and formal cultural activities in terms of their educational effect, the results here do suggest that there are some key differences in the factors which are associated with the accumulation of each factor. As already discussed, the reading component was significantly associated with a child's gender which was not the case for the formal cultural activities component while the urban-rural classification of where a child lived was significantly associated with the formal cultural activities component but had no association with a child's reading. This helps show the benefit of dividing cultural capital into these two components, as this divide allowed us to better see the nuances in a child's cultural capital accumulation which would have been lost had we combined the two components.

Bibliography

Allison, P., 2009. 'Missing Data', in Millsap, R.E. and Maydeu-Olivares, A. (eds.) *The SAGE handbook of quantitative methods in psychology*. Sage Publications.

Aschaffenburg, K. and Maas, I., 1997. Cultural and educational careers: The dynamics of social reproduction. *American sociological review*, pp.573-587.

Bailey Jr, D.B., 2002. Are critical periods critical for early childhood education?: The role of timing in early childhood pedagogy. *Early Childhood Research Quarterly*, *17*(3), pp.281-294.

Bamossy, G., 1982. Socializing experiences as predictors of performing arts patronage behavior. *Journal of Cultural Economics*, *6*(2), pp.37-44.

Becker, B., 2014. How often do you play with your child? The influence of parents' cultural capital on the frequency of familial activities from age three to six. *European Early Childhood Education Research Journal*, *22*(1), pp.4-13.

Bell, P. B., Lewenstein, V., Shouse, A. and Feder, M., 2009, *Learning Science in Informal Environments: People, Places, and Pursuits*, Washington, DC., National Academies Press.

Belsky, J., Vandell, D.L., Burchinal, M., Clarke-Stewart, K.A., McCartney, K. and Owen, M.T., 2007. Are there long-term effects of early child care?. *Child development*, *78*(2), pp.681-701.

Bennett, T., Savage, M., Silva, E.B., Warde, A., Gayo-Cal, M. and Wright, D., 2009. *Culture, class, distinction*. London: Routledge.

Berglund, E.V.A., Eriksson, M. and Westerlund, M., 2005. Communicative skills in relation to gender, birth order, childcare and socioeconomic status in 18-month-old children. *Scandinavian journal of psychology*, *46*(6), pp.485-491.

Berrueta-Clement, J. R., Schweinhart, L. J., Barnett, W. S., Epstein, A. E., and Weikart, D. P., 1984. *Changed lives: The effects of the Perry Preschool program on youths through age 19*. Ypsilanti, MI: High/Scope Press.

Bihagen, E. and Katz-Gerro, T., 2000. Culture consumption in Sweden: The stability of gender differences. *Poetics*, *27*(5-6), pp.327-349.

Billington, J., 2015. Reading between the Lines: The benefits of reading for pleasure. *Quick Reads*, University of Liverpool.

Blake, J., 1989. *Family size and achievement*. Los Angeles, CA: University of California Press.

Blakemore, S.J. and Frith, U., 2005. *The Learning Brain: Lessons for Education*. Oxford: Blackwell Publishing.

Blanden, J. and Machin, S., 2010. Millennium Cohort Study Briefing 13: Intergenerational inequality in early years assessments. *London: Institute for Education*.

Blanden, J., 2006. 'Bucking the trend': What enables those who are disadvantaged in childhood to succeed later in life?, DWP Working Paper No.31

Bonke, J. and Esping-Andersen, G., 2009. Parental investments in children: how educational homogamy and bargaining affect time allocation. *European Sociological Review*, *10*(20), pp.1-13.

Bourdieu, P. 1986. 'The Forms of Capital' in Richardson, J.G. (eds.), *Handbook of Theory and Research for the Sociology of Education*, New York: Greenwood Press, pp. 241-258.

Bourdieu, P. 2003. 'Cultural reproduction and social reproduction' in Jenks, C. (eds.), *Culture: Critical Concepts in Sociology*, London and New York: Routledge, pp. 63-99

Bourdieu, P. and Passeron, J.C., 1990. *Reproduction in education, society and culture* (Vol. 4). Sage.

Bourdieu, P., 1984. *Distinction: A social critique of the judgement of taste*. Cambridge: Harvard University Press.

Bourdieu, P., Darbel, A. and Schnapper, D., 1991. The Love of Art: European Art Museums and their Public. Cambridge: Polity.

Bourdieu,P. and Boltanski, L., 1981. The Education System and the Economy, in Lemert, C.C. (ed.), *Rupture and Renewal since 1968*. New York: Columbia University Press.

Bradley, R.H. and Corwyn, R.F., 2002. Socioeconomic status and child development. *Annual review of psychology*, *53*(1), pp.371-399.

Bradshaw, P. and Tipping, S., 2010. *Growing Up in Scotland: Children's social, emotional and behavioural characteristics at entry to primary school*. Edinburgh: Scottish Government.

Bradshaw, P. and Wasoff, F., 2009. *Growing Up in Scotland: Year 3-Multiple Childcare Provision and its Effects on Child Outcomes*. Edinburgh: Scottish Government.

Bradshaw, P., 2011**.** *Growing Up in Scotland: Changes in child cognitive ability in the pre-school years,* Edinburgh: Scottish Government.

Bradshaw, P., Knudsen, L. and Mabelis, J., 2015. Growing up in Scotland: the circumstances and experiences of 3-year-old children living in Scotland in 2007/08 and 2013.

Bradshaw, P., Lewis, G. and Hughes, T., 2014. *Growing Up in Scotland: Characteristics of pre-school provision and their association with child outcomes*. Edinburgh: Scottish Government.

Bradshaw, P., Tipping, S., Marryat, L. and Corbett, J., 2007. Growing Up in Scotland sweep 1–2005 user guide. *Edinburgh: Scottish Centre for Social Research*.

Broderick, M. and Hubbard, R., 2000. Teachers' perceptions of students: The missing link in connecting cultural capital and student success?. In *annual meeting of the Southern Sociological Society, New Orleans*.

Bromley, C., 2009. *Growing Up in Scotland: The impact of children's early activities on cognitive development*. Edinburgh: Scottish Government.

Burger, K., 2010. How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early childhood research quarterly*, *25*(2), pp.140-165.

Butt, S., Goddard, K. and La Valle, I., 2007. *Childcare nation?: Progress on the childcare strategy and priorities for the future*. London: Daycare Trust.

Byrne, B.M., 1998. *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Psychology Press.

Carreiras, M., Seghier, M.L., Baquero, S., Estévez, A., Lozano, A., Devlin, J.T. and Price, C.J., 2009. An anatomical signature for literacy. *Nature*, *461*(7266), p.983.

Caruana, E.J., Roman, M., Hernández-Sánchez, J. and Solli, P., 2015. Longitudinal studies. *Journal of thoracic disease*, *7*(11), pp.537-540.

Castro-Caldas, A., Petersson, K.M., Reis, A., Stone-Elander, S. and Ingvar, M., 1998. The illiterate brain. Learning to read and write during childhood influences the functional organization of the adult brain. *Brain: a journal of neurology*, *121*(6), pp.1053-1063.

Centre for Economics and Business Research, 2007. *Summary report: Attending Heritage Sites Quantitative analysis of data from Taking Part: The National Survey of Culture, Leisure and Sport*, Centre for Economics and Business Research.

Chan, T.W. and Goldthorpe, J.H., 2005. The social stratification of theatre, dance and cinema attendance. *Cultural Trends*, *14*(3), pp.193-212.

Clark, C. and Rumbold, K., 2006. Reading for Pleasure: A Research Overview. *National Literacy Trust*.

Creative New Zealand, 2009. *New Zealanders and the arts: Attitudes, attendance and participation in 2008*. Wellington: Creative New Zealand.

Crook, C.J., 1997. *Cultural practices and socioeconomic attainment: The Australian experience* (No. 120). Connecticut: Greenwood Publishing Group.

Currie, J., 2001. Early childhood education programs. *Journal of Economic perspectives*, *15*(2), pp.213-238.

De Graaf, N.D. and De Graaf, P.M., 2002. Formal and popular dimensions of cultural capital: Effects on children's educational attainment. *The Netherlands' Journal of Social Sciences. 38*(2), pp.167-186.

De Graaf, N.D., De Graaf, P.M. and Kraaykamp, G., 2000. Parental cultural capital and educational attainment in the Netherlands: A refinement of the cultural capital perspective. *Sociology of education*, pp.92-111.

De Graaf, P.M., 1986. The impact of financial and cultural resources on educational attainment in the Netherlands. *Sociology of education*, pp.237-246.

De Graaf, P.M., 1988. Parents' financial and cultural resources, grades, and transition to secondary school in the Federal Republic of Germany. *European Sociological Review*, *4*(3), pp.209-221.

De Graaf, P.M., 1989. Cultural reproduction and educational stratification. *Educational opportunities in the welfare state*, pp.39-57.

De Jager, H., 1967. *Cultuuroverdracht en concertbezoek* [*Cultural transmission and concert attendance*]. Leiden: Stenfert Kroese.

Dearden, L., Sibieta, L. and Sylva, K., 2011. *The socio-economic gradient in early child outcomes: evidence from the Millennium Cohort Study* (No. 11, 03). IFS working papers.

Department for Education, 2012. *Research evidence on reading for pleasure*. Education standards research team.

Department for Education, 2017. Provision for children under five years of age in England, January 2017. National Statistics.

Desforges, C. and Abouchaar, A., 2003. *The impact of parental involvement, parental support and family education on pupil achievement and adjustment: A literature review* (Vol. 433). Nottingham: DfES publications.

Dex, S. and Joshi, H. eds., 2005. *Children of the 21st century: from birth to nine months* (Vol. 1). Policy Press.

Diamond, M.C., Greer, E.R., York, A., Lewis, D., Barton, T. and Lin, J., 1987. Rat cortical morphology following crowded-enriched living conditions. *Experimental Neurology*, *96*(2), pp.241-247.

DiMaggio, P. and Mohr, J., 1985. Cultural capital, educational attainment, and marital selection. *American journal of sociology*, *90*(6), pp.1231-1261.

DiMaggio, P., 1982. Cultural capital and school success: The impact of status culture participation on the grades of US high school students. *American sociological review*, pp.189-201.

Dumais, S.A., 2002. Cultural capital, gender, and school success: The role of habitus. *Sociology of education*, pp.44-68.

Dumais, S.A., 2006. Early childhood cultural capital, parental habitus, and teachers' perceptions. *Poetics*, *34*(2), pp.83-107.

Education Scotland, 2012. *Making the difference: The impact of staff qualifications on children's learning in early years*. Livingston: Scotland.

Elbert, T., Pantev, C., Wienbruch, C., Rockstroh, B. and Taub, E., 1995. Increased cortical representation of the fingers of the left hand in string players. *Science*, *270*(5234), pp.305-307.

Elsley, S. and McMellon, C., 2010. *Starting young? Links between childhood and adult participation in culture and science: A literature review*. Scottish Government Social Research.

Erikson, R. and Jonsson, J.O., 1996. Explaining class inequality in education: The Swedish test case in: Erikson, R. and Jonsson, J.O. (Eds.). *Can Education be Equalized?*, Boulder Colorado: Westview Press, pp.1-63.

Erikson, R., 1984. Social Class of Men, Women, and Families. *Sociology* 18: pp.500–514.

Ermisch, J. F., and Francesconi, M., 2001. Family structure and children's achievements. *Journal of Population Economics, 14*, pp.249–270

Esping-Andersen, G., 2009. *Incomplete revolution: Adapting welfare states to women's new roles*. Cambridge: Polity.

Farkas, G., Grobe, R.P., Sheehan, D. and Shuan, Y., 1990. Cultural resources and school success: Gender, ethnicity, and poverty groups within an urban school district. *American sociological review*, pp.127-142.

Feinstein, L., 2003. Inequality in the early cognitive development of British children in the 1970 cohort. *Economica*, *70*(277), pp.73-97.

Feinstein, L., Robertson, D. and Symons, J., 1999. Pre-school Education and Attainment in the National Child Developement Study and British Cohort Study. *Education Economics*, *7*(3), pp.209-234.

Fiez, J.A. and Petersen, S.E., 1998. Neuroimaging studies of word reading. *Proceedings of the National Academy of Sciences*, *95*(3), pp.914-921.

FreshMinds, 2007. *Culture on Demand: Ways to engage a broader audience*. Department for Culture, Media and Sport.

Galloway, S., 2008. *The evidence base for arts and culture policy: A brief review of selected recent literature*, Edinburgh: Scottish Arts Council

Galsworthy, M.J., Dionne, G., Dale, P.S. and Plomin, R., 2000. Sex differences in early verbal and non-verbal cognitive development. *Developmental Science*, *3*(2), pp.206-215.

Ganzeboom, H., 1982. Explaining differential participation in high-cultural activities: a confrontation of information-processing and status-seeking theories. *Theoretical models and empirical analyses*, pp.186-205.

Georg, W., 2004. Cultural capital and social inequality in the life course. *European Sociological Review*, *20*(4), pp.333-344.

Gertler, P., Heckman, J., Pinto, R., Zanolini, A., Vermeersch, C., Walker, S., Chang, S.M. and Grantham-McGregor, S., 2014. Labor market returns to an early childhood stimulation intervention in Jamaica. *Science*, *344*(6187), pp.998-1001.

Goldthorpe, J.H., 2007. "Cultural Capital": Some Critical Observations. *Sociologica*, *1*(2), pp.1-22.

Goulding, A., 2008. Libraries and Cultural Capital. *Journal of Librarianship and Information Science*, 40 (4), pp.235-237.

Greenough, W.T., Black, J.E. and Wallace, C.S., 1987. Experience and brain development. *Child development*, pp.539-559.

Gunzler, D., Chen, T., Wu, P. and Zhang, H., 2013. Introduction to mediation analysis with structural equation modeling. *Shanghai archives of psychiatry*, *25*(6), p.390.

Gutman, L.M. and Feinstein, L., 2010. Parenting behaviours and children's development from infancy to early childhood: Changes, continuities and contributions. *Early Child Development and Care*, *180*(4), pp.535-556.

Halsey, A.H., Heath, A.F. and Ridge, J.M., 1980. *Origins and destinations: Family, class, and education in modern Britain*. Oxford: Clarendon Press.

Heckman, J. and Carneiro, P., 2003. *Human capital policy* (No. w9495). National Bureau of Economic Research.

Heckman, J.J., 2006. Skill formation and the economics of investing in disadvantaged children. *Science*, *312*(5782), pp.1900-1902.

Hill, V., 2005. Through the past darkly: a review of the British ability scales second edition. *Child and Adolescent Mental Health*, *10*(2), pp.87-98.

Hook, J.L., 2006. Care in context: Men's unpaid work in 20 countries, 1965–2003. *American sociological review*, *71*(4), pp.639-660.

Hotz, V.J. and Pantano, J., 2015. Strategic parenting, birth order, and school performance. *Journal of population economics*, *28*(4), pp.911-936.

Howard-Jones, P., 2007. *Neuroscience and education: Issues and opportunities. Commentary by the Teacher and Learning Research Programme*. London: TLRP.

Howard-Jones, P., 2010. *Introducing neuroeducational research: Neuroscience, education and the brain from contexts to practice*. Routledge.

Howard-Jones, P.A., 2014. Neuroscience and education: myths and messages. *Nature Reviews Neuroscience*, *15*(12), p.817.

Hu, L.T. and Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, *6*(1), pp.1-55.

Hughes, D.A. and Baylin, J., 2012. *Brain-Based Parenting: The Neuroscience of Caregiving for Healthy Attachment (Norton Series on Interpersonal Neurobiology)*. WW Norton & Company.

Hyde, K.L., Lerch, J., Norton, A., Forgeard, M., Winner, E., Evans, A.C. and Schlaug, G., 2009. The effects of musical training on structural brain development. *Annals of the New York Academy of Sciences*, *1169*(1), pp.182-186.

Jenkins, R., 2002. *Pierre Bourdieu*. New York: Routledge.
Jenson, J. and Saint-Martin, D., 2006. Building blocks for a new social architecture: the LEGO™ paradigm of an active society. *Policy & Politics*, *34*(3), pp.429-451.

Johnson, P. and Kossykh, Y., 2008. *Early years, life chances and equality: a literature review*. Manchester: Equality and Human Rights Commission.

Kalmijn, M. and Kraaykamp, G., 1996. Race, cultural capital, and schooling: An analysis of trends in the United States. *Sociology of education*, pp.22-34.

Katsillis, J. and Rubinson, R., 1990. Cultural capital, student achievement, and educational reproduction: The case of Greece. *American sociological review*, pp.270-279.

Katz-Gerro, T. and Sullivan, O., 2010. Voracious cultural consumption: The intertwining of gender and social status. *Time & Society*, *19*(2), pp.193-219.

Katz-Gerro, T., 2002. Highbrow cultural consumption and class distinction in Italy, Israel, West Germany, Sweden, and the United States. *Social forces*, *81*(1), pp.207-229.

Kenny, D.A., 2014. Measuring model fit. [Online]. Available at: http://davidakenny.net/cm/fit.htm [Accessed 25 February 2018].

Kingston, P.W., 2001. The unfulfilled promise of cultural capital theory. *Sociology of education*, pp.88-99.

Klebanov, P.K., Brooks-Gunn, J., McCarton, C. and McCormick, M.C., 1998. The contribution of neighborhood and family income to developmental test scores over the first three years of life. *Child development*, *69*(5), pp.1420-1436.

Kuhl, P.K., Williams, K.A., Lacerda, F., Stevens, K.N. and Lindblom, B., 1992. Linguistic experience alters phonetic perception in infants by 6 months of age. *Science*, *255*(5044), pp.606-608.

La sociologie est un sport de combat, 2001. [Film] Pierre Carles, France.

Lamb, S., 1989. Cultural consumption and the educational plans of Australian secondary school students. *Sociology of Education*, pp.95-108.

Lareau, A. and Horvat, E.M., 1999. Moments of social inclusion and exclusion race, class, and cultural capital in family-school relationships. *Sociology of education*, pp.37-53.

Lareau, A. and Weininger, E.B., 2003. Cultural capital in educational research: A critical assessment. *Theory and society*, *32*(5-6), pp.567-606.

Lareau, A., 2002. Invisible inequality: Social class and childrearing in black families and white families. *American sociological review*, pp.747-776.

Liaw, F.R. and Brooks-Gunn, J., 1994. Cumulative familial risks and low-birthweight children's cognitive and behavioral development. *Journal of Clinical Child Psychology*, *23*(4), pp.360-272.

Lindert, P.H., 1977. Sibling position and achievement. *Journal of Human Resources*, *12*, 198-219.

Little, T.D., Card, N.A., Bovaird, J.A., Preacher, K.J. and Crandall, C.S., 2007. Structural equation modeling of mediation and moderation with contextual factors. *Modeling contextual effects in longitudinal studies*, *1*, pp.207-230.

Lombroso, P. J., & Pruett, K. D., 2004. Critical periods in central nervous system development. In E. Zigler & S. J. Styfco (Eds.), *The Head Start debates*. Baltimore: Brookes. pp. 435 – 447

Love, J.M., Kisker, E.E., Ross, C., Raikes, H., Constantine, J., Boller, K., Brooks-Gunn, J., Chazan-Cohen, R., Tarullo, L.B., Brady-Smith, C. and Fuligni, A.S., 2005. The effectiveness of early head start for 3-year-old children and their parents: lessons for policy and programs. *Developmental psychology*, *41*(6), p.885.

MacCallum, R.C., Browne, M.W. and Sugawara, H.M., 1996. Power analysis and determination of sample size for covariance structure modeling. *Psychological methods*, *1*(2), p.130.

Maguire, E.A., Gadian, D.G., Johnsrude, I.S., Good, C.D., Ashburner, J., Frackowiak, R.S. and Frith, C.D., 2000. Navigation-related structural change in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences*, *97*(8), pp.4398-4403.

Mar, R. A., Oatley, K., and Peterson, J. B., 2009. Exploring the link between reading fiction and empathy: Ruling out individual differences and examining outcomes. *Communications - European Journal of Communication Research*, 34(4), 407-428.

Mathers, S., Sylva, K., Joshi, H., Hansen, K., Plewis, I., Johnson, J., George, A., Linskey, F. and Grabbe, Y., 2007. Quality of childcare settings in the Millennium Cohort Study.

McCarthy, K.F., Ondaatje, E.H. and Zakaras, L., 2001. *Guide to the Literature on Participation in the Arts*. Santa Monica, California: RAND corporation.

McClelland, K., 1990. Cumulative disadvantage among the highly ambitious. *Sociology of Education*, *63*, pp.102-121.

Melhuish, E.C., Phan, M.B., Sylva, K., Sammons, P., Siraj-Blatchford, I. and Taggart, B., 2008. Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues*, *64*(1), pp.95-114.

Micklewright, J., 1989. Choice at sixteen. *Economica*, *56(221),* pp.25-39.

Mohr, J. and DiMaggio, P., 1995. The intergenerational transmission of cultural capital. *Research in social stratification and mobility*, *14*, pp.167-200.

Morel, N., Palier, B. and Palme, J. (eds.), 2012. *Towards a social investment welfare state?: ideas, policies and challenges*. Policy Press.

Moreno, S., Marques, C., Santos, A., Santos, M., Castro, S.L. and Besson, M., 2009. Musical training influences linguistic abilities in 8-year-old children: more evidence for brain plasticity. *Cerebral Cortex*, *19*(3), pp.712-723.

Morgan, K.J., 2012. Promoting social investment through work-family policies: which nations do it and why?. *Towards a social investment welfare state*, pp.153-180.

Mostafa, T., 2014. Millennium Cohort Study: Technical report on response in sweep 5 (age 11).

Nagel, I. and Ganzeboom, H.B., 2002. Participation in legitimate culture: family and school effects from adolescence to adulthood. *The Netherlands' Journal of Social Sciences. 38*(2), pp.102-120.

Nagel, I., 2010. Cultural participation between the ages of 14 and 24: intergenerational transmission or cultural mobility?. *European Sociological Review*, *26*(5), pp.541-556.

OECD, 2002. *Reading for change: Performance and engagement across countries. Results from PISA 2000*. New York: Organisation for Economic Cooperation and Development.

Office for National Statistics, 2005. *The National Statistics Socio-economic Classification: origins, development and use* (pp. 1-120). Basingstoke: Palgrave Macmillan.

Office for National Statistics, 2015, *Chapter 3: Equivalised Household Income*.

Orend, R., 1988. Socialization in the Arts. *Research Division Report 21*, Washington, DC: National Endowment for the Arts.

Oskala, A., Keaney, E., Chan, T.W. and Bunting, C., 2009. Encourage children today to build audience for tomorrow: Evidence from the Taking Part survey on how childhood involvement in the arts affects arts engagement in adulthood. London: Arts Council England.

Pantev, C., Oostenveld, R., Engelien, A., Ross, B., Roberts, L.E. and Hoke, M., 1998. Increased auditory cortical representation in musicians. *Nature*, *392*(6678), p.811.

Parkes, A., Sweeting, H. and Wight, D., 2014. Growing Up in Scotland: Family and school influences on children's social and emotional well-being. Scottish Government.

Paterson, L., Gow, A.J. and Deary, I.J., 2013. School reform and opportunity throughout the lifecourse: the Lothian Birth Cohort 1936. *School Effectiveness and School Improvement*, *25*(1), pp.105-125.

Pearl, J., 2001. Direct and indirect effects. In *Proceedings of the seventeenth conference on uncertainty in artificial intelligence* (pp. 411-420). Morgan Kaufmann Publishers Inc.

Peterson, R. A. and Simkus, A., 1992. How Musical Tastes Mark Occupational Status Groups. In Lamont, M. and Fournier, M. (Eds), *Cultivating Differences: Symbolic Boundaries and the Making of Inequality*. Chicago, IL: The University of Chicago Press, pp. 152-186.

Peterson, R.A. and Kern, R.M., 1996. Changing highbrow taste: From snob to omnivore. *American sociological review*, *61*, pp.900-907.

Peterson, R.A., 2005. Problems in comparative research: The example of omnivorousness. *Poetics*, *33*(5), pp.257-282.

Petersson, K.M. and Reis, A., 2006. Characteristics of illiterate and literate cognitive processing: Implications of brain-behavior co-constructivism. *Lifespan development and the brain: The perspective of biocultural co-constructivism*, pp.279-305.

Phillips, D.A. and Shonkoff, J.P. eds., 2000. *From neurons to neighborhoods: The science of early childhood development*. National Academies Press.

PLB Consulting Ltd, 2001. *Developing New Audiences for the Heritage: Research Study for Heritage Lottery Fund.*

Rakic, P., 1995. Corticogenesis in human and nonhuman primates. In Gazzaniga, M.S. (ed.) *The Cognitive Neurosciences.* Cambridge: MIT Press.

Reay, D., 2004. Education and cultural capital: The implications of changing trends in education policies. *Cultural trends*, *13*(2), pp.73-86.

Robertson, E.M., Theoret, H. and Pascual-Leone, A., 2003. Studies in cognition: the problems solved and created by transcranial magnetic stimulation. *Journal of Cognitive Neuroscience*, *15*(7), pp.948-960.

Robson, K., 2003. Teenage Time Use as Investment in Cultural Capital, *Working Papers of the Institute for Social and Economic Research*, paper 2003-12. Colchester: University of Essex.

Roscigno, V.J. and Ainsworth-Darnell, J.W., 1999. Race, cultural capital, and educational resources: Persistent inequalities and achievement returns. *Sociology of education*, pp.158-178.

Schoon, I. and Parsons, S., 2002. Teenage aspirations for future careers and occupational outcomes. *Journal of Vocational Behavior*, *60*(2), pp.262-288.

Schweinhart, L.J., 2005. *Lifetime effects: the High/Scope Perry Preschool study through age 40* (No. 14). High/Scope Foundation.

Scottish Government. 2009. *People and culture in Scotland 2008: Results from the Scottish household survey culture and sport module 2007/2008.* Edinburgh: National Statistics for Scotland.

Scottish Government, 2014. Scottish Government Urban/Rural Classification (2013 – 2014). Edinburgh: Scottish Government.

Singer, J.D. and Willett, J.B., 2003. *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. Oxford University Press.

SSCC, 2016. *Stata for Researchers: Statistics*. [ONLINE] Available at: https://www.ssc.wisc.edu/sscc/pubs/sfr-stats.htm. Social Science Computing Cooperative [Accessed 26 February 2018].

Sullivan, A. and Brown, M., 2015. Reading for pleasure and progress in vocabulary and mathematics. *British Educational Research Journal*, *41*(6), pp.971-991.

Sullivan, A., 2000. *Cultural Capital, Rational Choice, and Educational Inequalities*. Doctoral dissertation, Oxford University.

Sullivan, A., 2001. Cultural capital and educational attainment. *Sociology*, *35*(4), pp.893-912.

Sullivan, A., 2007. Cultural capital, cultural knowledge and ability. *Sociological Research Online*, *12*(6), pp.1-14.

Sullivan, O. and Katz-Gerro, T., 2007. The Omnivore Thesis Revisited: Voracious Cultural Consumers. *European Sociological Review*, *23*(2), pp.123-137.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B., 2004. The effective provision of pre-school education (EPPE) project: Findings from pre-school to end of key stage 1.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B., 2008. Final report from the primary phase: Pre-school, school and family influences on children's development during Key Stage 2 (7-11).

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B., 2011. Pre-school quality and educational outcomes at age 11: Low quality has little benefit. *Journal of Early Childhood Research*, *9*(2), pp.109-124.

Teachman, J.D., 1987. Family background, educational resources, and educational attainment. *American Sociological Review*, pp.548-557.

Teachman, J.D., Paasch, K. and Carver, K., 1997. Social capital and the generation of human capital. *Social forces*, *75*(4), pp.1343-1359.

The Reading Agency, 2003. *Chatterbooks Evaluation*, unpublished evaluation.

Thomas, M.S. and Johnson, M.H., 2008. New advances in understanding sensitive periods in brain development. *Current directions in psychological science*, *17*(1), pp.1-5.

Twardosz, S., 2012. Effects of experience on the brain: The role of neuroscience in early development and education. *Early Education & Development*, *23*(1), pp.96-119.

Van Eijck, K., 1997. The impact of family background and educational attainment on cultural consumption: A sibling analysis. *Poetics*, *25*(4), pp.195-224.

Vries, J.D., 2006. *Measurement error in family background variables: The bias in the intergenerational transmission of status, cultural consumption, party preference, and religiosity*. Doctoral dissertation, Radboud University Nijmegen.

Wade, B. and Moore, M., 2000. A sure start with books. *Early Years*, *20*(2), pp.39-46.

Waldfogel, J. and Washbrook, E., 2011. Early years policy. *Child Development Research*, *2011*.

Walker, C., Scott-Melnyk, S and Sherwood, K (2002). *Reggae to Rachmaninoff: How and why people participate in arts and culture. Building Arts Participation: New findings from the field*, Washington, D.C.: The Urban Institute.

Westerlund, M. and Lagerberg, D., 2008. Expressive vocabulary in 18-month-old children in relation to demographic factors, mother and child characteristics, communication style and shared reading. *Child: care, health and development*, *34*(2), pp.257-266.

Wildhagen, T., 2009. Why Does Cultural Capital Matter For High School Academic Performance? An Empirical Assessment of Teacher-Selection and Self-Selection Mechanisms as Explanations of the Cultural Capital Effect. *The Sociological Quarterly*, *50*(1), pp.173-200.

Wilkinson, S., 2015. *Literature review: The impact of reading for pleasure and empowerment*. London: The Reading Agency.

Wood, C., Vardy, E. and Tarczynski-Bowles, L., 2015. Early Words Together--Impact on Families and Children. *National Literacy Trust*.

Appendix

Distributions of background variables

Table 55. Distribution of social class (age two and age four).

Social class	Age two	Age four
1. Managerial and professional occupations	2,375 (52.6%)	2,158 (54.0%)
2. Intermediate occupations	634 (14.1%)	588 (14.7%)
3. Small employers etc.	284 (6.3%)	268 (6.7%)
4. Lower supervisory and technical occupations	374 (8.3%)	325 (8.1%)
5. Semi-routine and routine occupations	746 (16.5%)	597 (15.0%)
6. Never worked	99 (2.2%)	58 (1.5%)
Total	4,512 (100%)	3,994 (100%)

Table 56. Distribution of parental education level.

Parental education level	Frequency (%)
Degree or equivalent	1,691 (37.6%)
Vocational qualification below degree	1,780 (39.6%)
Higher Grade or equivalent	229 (5.1%)
Standard Grade or equivalent	795 (17.7%)
Total	4,495 (100%)

Table 57. Distribution of urban-rural classification at age two and four.

Urban-rural classification	Age two	Age four
Large urban	1,625 (36.1%)	1,368 (34.3%)
Other urban	1,382 (30.7%)	1,321 (33.1%)
Small, accessible towns	444 (9.9%)	408 (10.2%)
Small remote towns	139 (3.1%)	122 (3.1%)
Accessible rural	683 (15.2%)	527 (13.2%)
Remote rural	224 (5.0%)	248 (6.2%)
Total	4,497 (100%)	3,994 (100%)

Table 58. Distribution of the sex of the child.

Sex of the child	Frequency (%)
Boy	2,325 (51.5%)
Girl	2,187 (48.5%)
Total	4,512 (100%)

Table 59. Distribution of whether the child was a first born.

Whether the child is a first born	Frequency (%)
Not a first born	2,659 (51.0%)
First-born child	2,558 (49.0%)
Total	5,217 (100%)

Table 60. Distribution of whether the child had a sibling born since the survey started at age two and age four.

Whether the child had a sibling born since the survey started	Age two	Age four
No sibling born	4,118 (91.3%)	2,602 (67.7%)
Sibling born	394 (8.7%)	1,242 (32.3%)
Total	4,512 (100%)	3,844 (100%)

Table 61. Distribution of the number of children's books in the home at age one and age three.

Number of children's books in the home	Age One	Age Three
0-10	1,445 (27.7%)	250 (6.0%)
11-20	1,263 (24.2%)	486 (11.6%)
21-30	750 (14.4%)	688 (16.4%)
30+	1,756 (33.7%)	2,768 (66.0%)
Total	5,214 (100%)	4,192 (100.0%)

Table 62. Distribution of parent's happiness with their child's access to activities.

Parent's happiness with child's access to activities	Frequency (%)
Very happy with the range of activities	896 (20.1%)
Quite happy with the range of activities	1,702 (38.1%)
Would like child to have slightly more access	1,213 (27.2%)
Would like child to have much more access	652 (14.6%)
Total	4,463 (100%)

Table 63. Distribution of Scottish Index of Multiple Deprivation quintiles.

Scottish Index of Multiple Deprivation (quintile)	Frequency (%)
Least deprived quintile (0.9449 - 7.7446)	873 (21.9%)
Second quintile (7.7472 - 13.5627)	862 (21.6%)
Third quintile (13.5640 - 21.0436)	833 (20.9%)
Fourth quintile (21.0521 - 33.6982)	672 (16.8%)
Most deprived quintile (33.7252 -89.0941)	754 (18.9%)
Total	3,994 (100%)

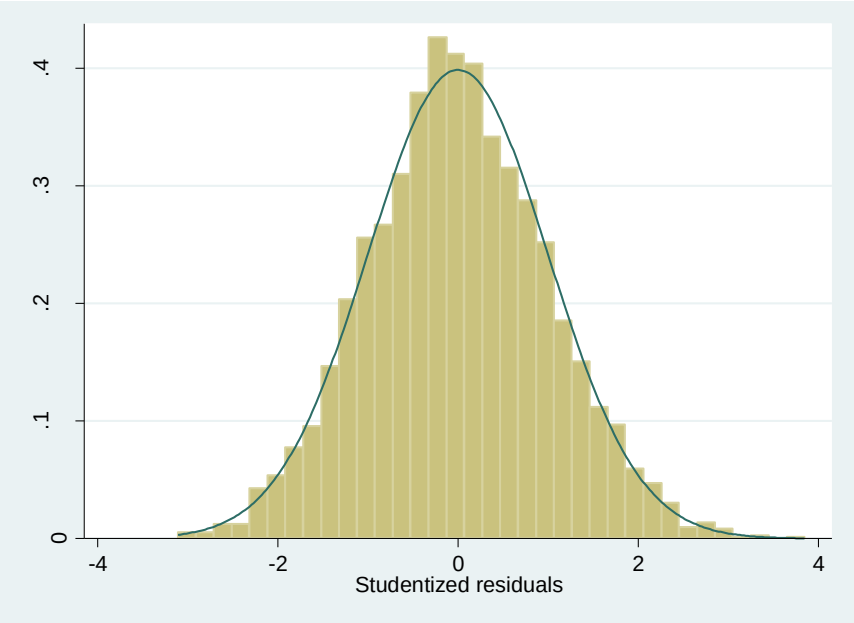
Table 64. Distribution of whether the child used childcare regularly at age two and age four.

Whether the child used childcare regularly	Age two	Age four
Not regular childcare	1,388 (30.8%)	1,387 (34.7%)
Regular childcare	3,124 (69.2%)	2,607 (65.3%)
Total	4,512 (100%)	3,994 (100%)

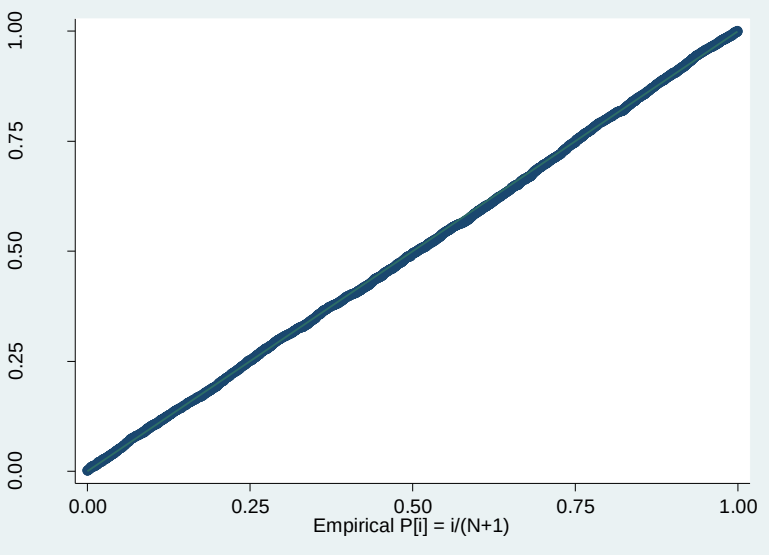
Diagnostics for Chapter 1

For cultural omnivorousness (age 2)

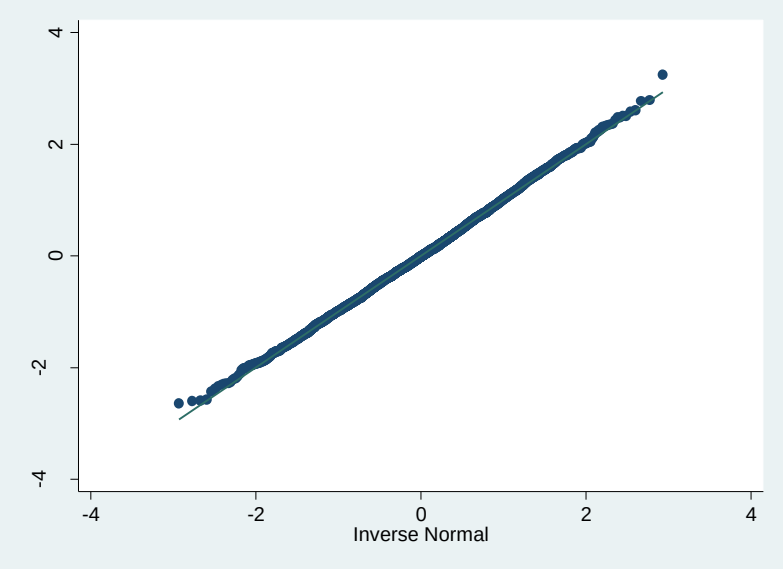
We explored the distribution of the residuals for this regression. The residuals should typically be normally distributed and this is what we found as evidenced by the histogram below.



Another way of looking at the normality of the residuals is through pnorm and qnorm graphs. A pnorm plot is sensitive to deviations from normality near the centre of the distribution of the residuals. As you can see from the plot below, there is remarkably little deviation.



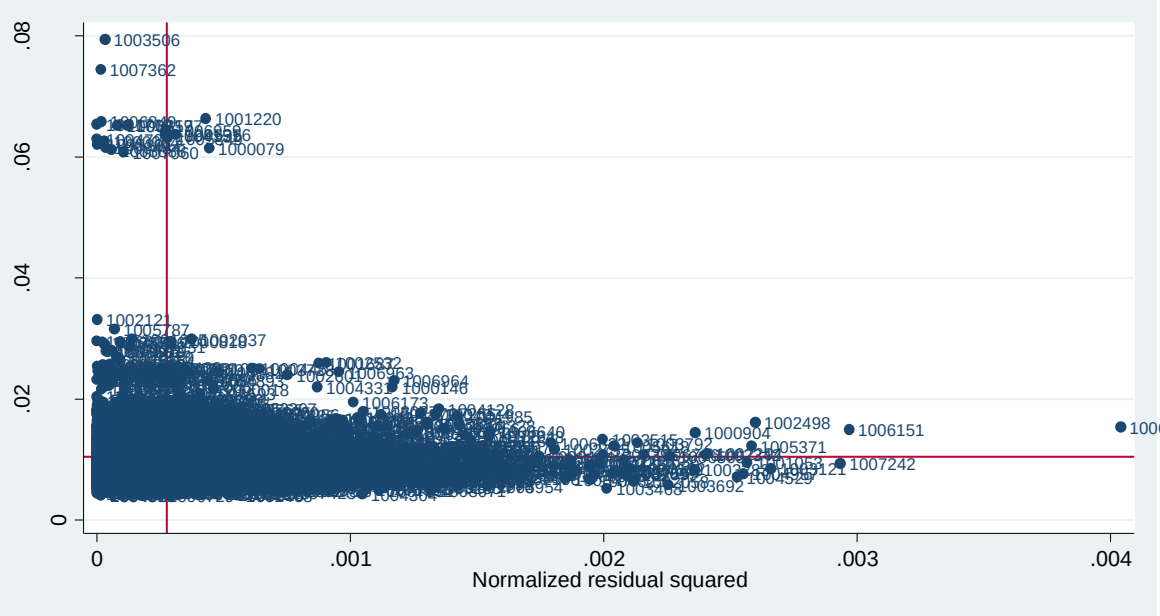
A qnorm plot is helpful in showing whether there is any deviation from a normal distribution towards the ends of the distribution. As you can see from the plot below, there is some variation towards the ends of the distribution but not enough to consider this a problem.



I then looked at any particularly outlying residuals and investigated those individuals' responses to the variables in the regression. These were individuals who didn't really fit the overall pattern of the regression. For instance, the greatest outlying individual scored highly on cultural omnivorousness but lowly on a number of the variables which the regression suggested would predict high cultural omnivorousness. I then looked at whether removing this individual from the regression would affect the model. Excluding this individual had very little effect on the model.

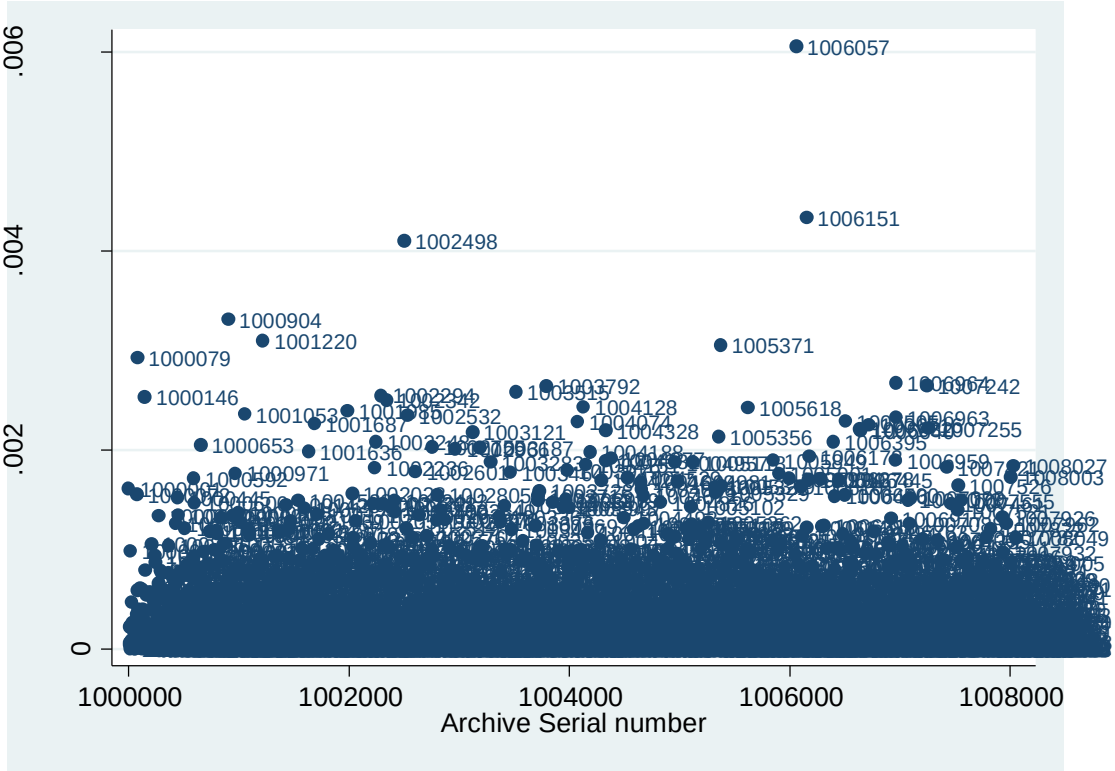
Next, I looked at cases which had high leverage. These are individuals with extreme values on independent variables in the model. Leverage measures how far an independent variable deviates from its mean. The problem with high leverage is that it can affect the regression coefficient estimates. I ran regressions excluding these cases and saw very little difference in the coefficient estimates or the significance levels – not enough to particularly worry me anyway.

This led me to look for any influential cases; cases that would affect the regression estimates if they were removed. To do this involved looking at both outlying residuals and cases with high leverage. I ran a graph which plotted the leverage of cases against their residual squared (so that negative and positive outlying residuals were both obvious). The below graph shows the results:

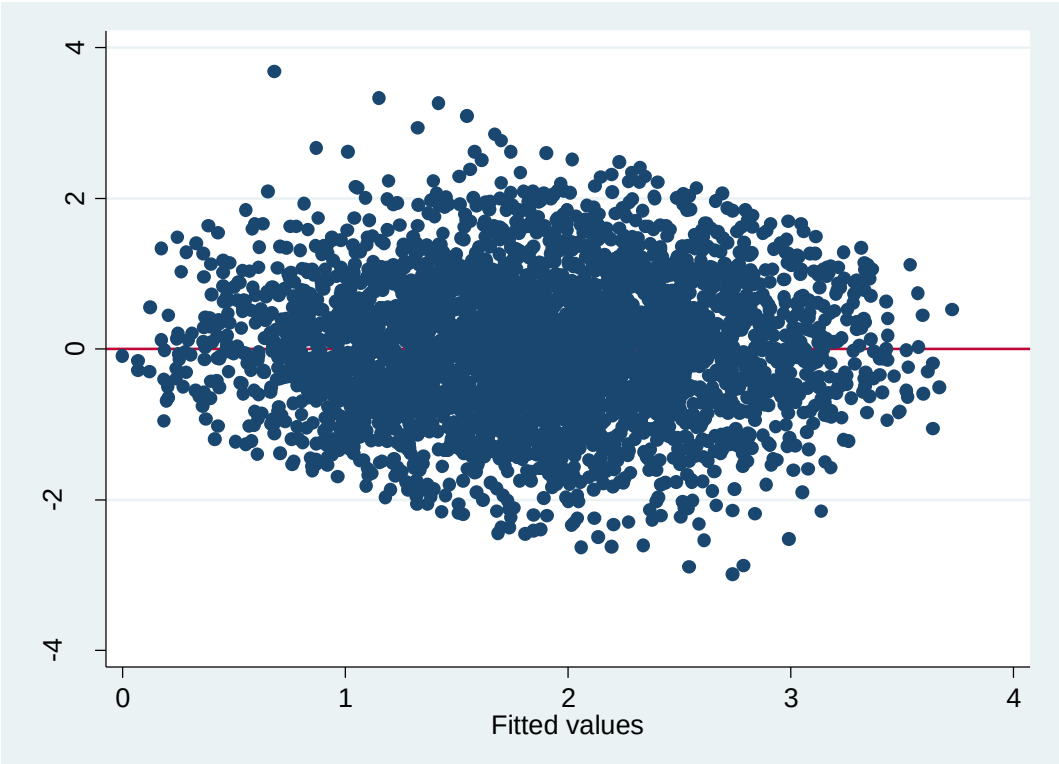


You can see from the graph the one very outlying residual and some rather outlying cases with high leverage. However, there are practically no cases with both high leverage and a high residual which is what we are looking for. We could therefore suggest that we do not have a huge problem with influential cases in this particular regression

However, I decided as well to look at a test for influence – Cook's D. Below you can see a graph which plots the Cook's Ds of every individual in the regression. We can see that the individual with the highest influence is the individual with the ID number 1006057. This is the same individual who had the greatest outlying residual. We have already commented on how this particular individual scores very lowly on the cultural omnivorousness measure but highly on those variables associated with high cultural omnivorousness. We have also already shown that removing this individual from the regression has very little effect and does not influence any findings I had.



I then moved on to check for heteroscedasticity in the model. This refers to the variation in the size of the residuals and whether or not that is random. We can see from the plot below that there does not seem to be any real pattern in the variation of the residuals, indicating that there are no issues with heteroscedasticity.



Next, I looked at the potential issue of multicollinearity. This is a problem whereby predictor variables are too strongly correlated with one another which can seriously affect regression estimates. I had initially worried that my household income and social class variables might suffer from this issue. I explored the issue of multicollinearity by looking at the vif (variance inflation factor) values for my independent variables. Whilst the values for my cultural importance categories were relatively high – indicating that there might be some overlap between them – none of the values fell above the value of 10 which as a rule of thumb would mean they require further investigation.

Indirect effects tables

Table 65. Unstandardized indirect effects of SEM model predicting number of children's books in the household.

Number of books in the household (indirect effects)	Coeff.	Stand. Error	z	Sig. level
Social class	0.015	0.003	5.49	0.000
Parental education level	0.030	0.005	6.41	0.000
Parental cultural capital				
Parental reading				
Parental library usage				
Parental creative writing				
Importance of cultural activities				

Table 66. Unstandardized indirect effects of SEM model predicting child's reading.

Reading (indirect effects)	Coeff.	Stand. Error	z	Sig. level
Social class	0.032	0.004	8.60	0.000
Parental education level	0.049	0.006	8.63	0.000
Parental cultural capital				
Parental reading	0.021	0.005	4.47	0.000
Parental library usage	0.023	0.004	5.25	0.000
Parental creative writing	0.013	0.010	1.28	0.200
Importance of cultural activities	0.008	0.003	2.82	0.005
Other background variables				
Number of books in the household				
Female				
SIMD				
First born				

Sibling born				
Urban-rural classification				
Access to cultural activities				
Childcare usage				
Household income	0.001	0.000	3.48	0.000

Table 67. Unstandardized indirect effects of SEM model predicting child's formal cultural activities component.

Formal cultural activities (indirect effects)	**Coeff.**	**Stand. Error**	**z**	**Sig. level**
Social class	0.017	0.002	7.80	0.000
Parental education level	0.029	0.003	8.43	0.000
Parental cultural capital				
Parental reading	0.005	0.001	4.47	0.000
Parental library usage	0.005	0.001	5.25	0.000
Parental creative writing	0.003	0.002	1.28	0.200
Importance of cultural activities	0.002	0.001	2.82	0.005
Other background variables				
Number of books in the household				
Female				
SIMD				
First born				
Sibling born				
Urban-rural classification				
Access to cultural activities				
Childcare usage				
Household income	0.000	0.000	3.24	0.001

Table 68. Unstandardized indirect effects of SEM model predicting educational ability (age 3).

Age three educational ability (Indirect effects)	Coeff.	Stand. Error	z	Sig. level
Social class	0.254	0.045	5.65	0.000
Parental education level	0.610	0.100	6.07	0.000
Parental cultural capital				
Parental reading	0.511	0.058	8.88	0.000
Parental library usage	0.518	0.057	9.14	0.000
Parental creative writing	0.732	0.121	6.03	0.000
Importance of cultural activities	0.592	0.040	14.75	0.000
Other background variables				
Number of books in the household	0.468	0.043	10.77	0.000
Female	0.015	0.090	0.17	0.864
SIMD	-0.107	0.035	-3.09	0.002
First born	0.250	0.087	2.85	0.004
Sibling born	-0.182	0.089	-2.04	0.041
Urban-rural classification	-0.080	0.031	-2.60	0.009
Access to cultural activities	0.200	0.054	3.73	0.000
Childcare usage	0.056	0.075	0.75	0.451
Household income	0.018	0.005	3.85	0.000
Cultural capital				
Formal cultural activities				
Reading				

Table 69. Unstandardized indirect effects of SEM model predicting educational ability (age 5).

Age five educational ability (Indirect effects)	Coeff.	Stand. Error	z	Sig. level
Social class	0.198	0.038	5.24	0.000
Parental education level	0.488	0.087	5.64	0.000
Parental cultural capital				
Parental reading	0.384	0.043	8.86	0.000
Parental library usage	0.388	0.043	9.08	0.000
Parental creative writing	0.555	0.091	6.07	0.000
Importance of cultural activities	0.450	0.030	14.82	0.000
Other background variables				
Number of books in the household	0.366	0.033	10.96	0.000
Female	0.020	0.070	0.29	0.773
SIMD	-0.082	0.027	-3.00	0.003
First born	0.201	0.069	2.90	0.004
Sibling born	-0.139	0.070	-1.99	0.047
Urban-rural classification	-0.061	0.024	-2.48	0.013
Access to cultural activities	-0.154	0.043	-3.57	0.000
Childcare usage	0.042	0.058	0.73	0.464
Household income	0.013	0.004	3.59	0.000
Cultural capital				
Formal cultural activities				
Reading				

Regression tables using parental library usage measured at age six

Table 70. Regression analysis of change in cultural omnivorousness using change in parental library usage as a predictor

Change in cultural omnivorousness	Coef.	Std. Err.
Social Class of family		
1. Managerial and professional occupations *(reference)*		
2. Intermediate occupations	0.071	0.061
3. Small employers etc	0.045	0.081
4. Lower supervisory and technical occupations	0.174*	0.078
5. Semi-routine and routine occupations	-0.007	0.071
6. Never worked	0.164	0.174
Parental Education Level		
Degree or equivalent *(reference)*		
Vocational qualification or below degree	-0.052	0.050
Higher Grade or equivalent	-0.018	0.093
Standard Grade or equivalent	-0.093	0.074
Rural-urban classification		
Large urban (*reference*)		
Other urban	0.028	0.047
Small, accessible towns	0.201**	0.067
Small remote towns	0.112	0.111
Accessible rural	0.061	0.064
Remote rural	0.000	0.083
Number of parents who read	-0.012	0.029
Change in parental library usage	0.140***	0.022

Parental creative writing	-0.138*	0.059
Female	0.021	0.037
First born	0.057	0.041
Sibling born	-0.011	0.043
Household income	0.006**	0.002
Number of books in the house		
0-10	-0.273**	0.091
11-20	0.003	0.063
21-30	-0.053	0.053
30+ *(reference)*		
Importance of cultural activities		
Not at all important	0.674***	0.103
Not really important	0.410***	0.060
Neither important nor unimportant	0.295***	0.059
Quite important	0.157**	0.054
Very important *(reference)*		
Access to cultural activities		
Very happy with the range of activities *(reference)*		
Quite happy with the range of activities	0.197***	0.051
Would like child to have slightly more access	0.105	0.056
Would like child to have much more access	0.122	0.069
SIMD		
0.9449 - 7.7446 - least deprived (*reference*)		
7.7472 - 13.5627	-0.074	0.058
13.5640 - 21.0436	-0.049	0.060
21.0521 - 33.6982	-0.140*	0.065
33.7252 -89.0941 – most deprived	-0.021	0.067
Use childcare	0.049	0.041
Constant	0.294***	0.111

Table 71. Regression analysis of change in cultural omnivorousness using parental library usage at age two and age six as predictors

Change in cultural omnivorousness	Coef.	Std. Err.
Social Class of family		
1. Managerial and professional occupations *(reference)*		
2. Intermediate occupations	0.082	0.061
3. Small employers etc	0.052	0.081
4. Lower supervisory and technical occupations	0.177*	0.078
5. Semi-routine and routine occupations	0.000	0.071
6. Never worked	0.160	0.174
Parental Education Level		
Degree or equivalent *(reference)*		
Vocational qualification or below degree	-0.068	0.050
Higher Grade or equivalent	-0.035	0.093
Standard Grade or equivalent	-0.120	0.074
Rural-urban classification		
Large urban (*reference*)		
Other urban	0.028	0.047
Small, accessible towns	0.211***	0.067
Small remote towns	0.136	0.111
Accessible rural	0.053	0.064
Remote rural	0.007	0.083
Number of parents who read	-0.003	0.029
Parental library usage (age two)		
Don't use library *(reference)*		
Use library sometimes	-0.241***	0.042
Use library often	-0.365***	0.059

Parental library usage (age six)		
Don't use library *(reference)*		
Use library sometimes	0.199***	0.044
Use library often	0.180***	0.053
Parental creative writing	-0.136*	0.059
Female	0.028	0.037
First born	0.050	0.041
Sibling born	-0.012	0.043
Household income	0.006**	0.002
Number of books in the house		
0-10	-0.292**	0.091
11-20	-0.007	0.063
21-30	-0.062	0.053
30+ *(reference)*		
Importance of cultural activities		
Not at all important	0.666***	0.103
Not really important	0.393***	0.060
Neither important nor unimportant	0.288***	0.059
Quite important	0.145**	0.054
Very important *(reference)*		
Access to cultural activities		
Very happy with the range of activities *(reference)*		
Quite happy with the range of activities	0.188***	0.051
Would like child to have slightly more access	0.093	0.056
Would like child to have much more access	0.103	0.069
SIMD		
0.9449 - 7.7446 - least deprived (*reference*)		
7.7472 - 13.5627	-0.073	0.057
13.5640 - 21.0436	-0.048	0.059

21.0521 - 33.6982	-0.133*	0.065
33.7252 -89.0941 – most deprived	-0.020	0.067
Use childcare	0.048	0.041
Constant	0.373***	0.118